ERS Info-File

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Dropout Prevention
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This *Info-File* discusses positive and negative factors that effect whether students will dropout of high school. Describes strategies and programs that have been used to reduce the dropout rate at the school and district level.

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Connecting Entrance and Departure

The Transition to Ninth Grade and High School Dropout

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Recent reports have demonstrated that the United States has a dropout crisis of alarming proportions. In some large-city school systems, more than 50% of students leave high school without a diploma. A large proportion of these dropouts have not accumulated enough credits to be promoted beyond ninth grade. Using survey and student record data for a cohort of Philadelphia public school students, the authors find that ninth-grade academic outcomes are not simply proxies for student characteristics measured during the pre–high school years and that ninth-grade outcomes add substantially to the ability to predict dropout. An implication is that efforts to decrease the dropout rate would do well to focus on the critical high school transition year.

Keywords: *dropout; ninth-grade transition; high school*

One of the most telling statistics about urban high schools is the large number of students who leave school without ever graduating. Common Core data show that the highest rates of student dropout occur in large cities such as New York, Detroit, Baltimore, Chicago, and Philadelphia (Balfanz & Legters, 2004; Neild & Balfanz, 2006b; Education Week, 2007). Recent reports have indicated that dropout rates in large cities sometimes exceed 50% (Education Week, 2007). The sheer size of many of these urban school systems means that a 50% dropout rate represents the loss of thousands of students from each grade cohort.

Entrance into adult life without a high school diploma carries severe economic and occupational disadvantages (Caspi, Wright, Moffitt, & Silva,

1998). In 2000, high school dropouts age 25 and older experienced a 6.4% unemployment rate, compared to 3.5% for those with a high school degree and 1.7% for those with 4-year college degrees. Median annual income for male dropouts in 1999 was $25,035, compared to $33,184 for high school graduates and $52,985 for those with 4-year degrees (U.S. Department of Education, 2002). Black male high school dropouts were more likely to be incarcerated than employed during 2000 (Western & Pettit, 2002).

Although dropout itself represents a crisis point in students' educational biographies, urban teenagers who leave school without graduating often have experienced earlier crisis points in high school, notably severe academic difficulty during the freshman year. The difficulty associated with the transition to high school is well documented in large cities like Baltimore (Legters, Balfanz, Jordan, & McPartland, 2002), Chicago (Roderick & Camburn, 1996, 1999), and Philadelphia (Neild & Balfanz, 2006b), as well as other locations (Roderick, 1993; Simmons & Blyth, 1987). About one third of the first-time freshmen in the Philadelphia public schools fail to accumulate enough credits for promotion (Neild & Balfanz, 2006a). More than 40% of Chicago freshmen fail a major subject during the first semester (Roderick & Camburn, 1996). In the cohort of students described in this article, 60% of those who dropped out within 6 years of starting high school had not been promoted after their 1st year, compared to just 8% of those who graduated. Among those who spent more than 1 year as ninth graders, only 20% completed high school in 6 years.

Given the long-term consequences of dropout, its association with academic difficulty during the freshman year warrants additional investigation. If ninth-grade outcomes were simply reflections of pre–high school student characteristics, then the high school transition itself, despite its manifold difficulties, would have little impact on students' educational attainment. But if ninth-grade outcomes contributed substantially to our ability to predict dropout despite a strong set of controls for student background and previous academic achievement, one could reasonably conclude that the transition alters students' educational trajectories in ways that could not fully be predicted prior to high school. Such a result would imply that there are key moments in urban students' educational careers that, if poorly negotiated, heighten the probability of school dropout. Moreover, if the freshman year is a time of increased risk for students, representing a departure from previous patterns of behavior, it may also be a key point for intervention to minimize the risk of dropping out.

In this article, we address the question of whether ninth grade represents a particularly vulnerable moment for students on the road to graduation. In so doing, we echo Willett and Singer's (1991) argument that dropout research should focus on the "when" of dropout rather than just the "whether." We examine the impact of freshman year academic outcomes on the likelihood of dropping out within 6 years of entering high school, controlling for pre–high school academic background and a wide range of demographic, family, peer, and attitudinal factors. Our data come from the Philadelphia Education Longitudinal Study (PELS), one of the very few large-scale longitudinal studies of a cohort of youths in a single urban school district. The data include survey responses from parents and students, as well as individual-level information from school district records. The combination of these data sets provides a unique opportunity to examine the transition to high school and its effect on high school dropout.

We find that, despite a strong set of controls for student characteristics prior to entering high school, ninth-grade course failure and attendance have a substantial impact on the probability of dropping out within 6 years of starting high school, suggesting that a key area for focusing dropout prevention programs is on the transition to high school itself.

Individual and Institutional Correlates of Dropout

A number of proximal and distal correlates of dropping out have been well established by research. For some students, the precursors of dropout appear quite early (Alexander, Entwisle, & Horsey, 1997; Barrington & Hendricks, 1989; Ensminger & Slucarcik, 1992; Roderick, 1993). A longitudinal study of Baltimore schoolchildren identified predictors of dropout that extended as far back as the early elementary years, including family stress, students' initial engagement with school, and reading group level (Alexander et al., 1997). The critical transition into school, shaped in part by family experiences in the preschool years, sets some students on track for low academic achievement, acquisition of the "troublemaker" label, and alienation from school. Recovery from a difficult transition into schooling is possible, but many students experience the negative effects years later through retention in grade, assignment to low-track and remedial classes, and in some cases, dropping out.

Although early childhood and school experiences may predispose some students to drop out of school, subsequent events interact with previous dispositions to increase or decrease the probability of dropping out. Researchers have suggested that dropping out is the culmination of a process of becoming less engaged with school (Finn, 1989; Newmann, Wehlage, & Lamborn, 1992; Wehlage, Rutter, Smith, Lesko, & Fernandez,

1989). Researchers typically posit two dimensions of engagement with schooling: academic and social. At the most basic level, students are *academically engaged* with school to the extent that they follow rules and participate superficially. Deeper academic engagement is evidenced by effort to acquire knowledge and master skills (Lamborn, Brown, Mounts, & Steinberg, 1992; Newmann et al., 1992). *Social engagement* refers to the involvement of students in positive relationships with teachers and peers. Both academic and social disengagement have the potential to lead to dropout. Even controlling for academic achievement—itself an important predictor of dropping out (Goldschmidt & Wang, 1999; Swanson & Schneider, 1999; Wehlage & Rutter, 1986)—and student background, academic engagement predicts dropping out (Goldschmidt & Wang, 1999; Rumberger, 1995; Rumberger & Larson, 1998).

The extent to which individuals become academically and socially engaged with their schools is partly a reflection of institutional characteristics and organization. Bureaucratically organized high schools, in which staff work roles are highly differentiated and decision making is hierarchical, have been criticized for creating depersonalized, alienating environments that allow struggling students to slip through the cracks (Angus & Mirel, 1999; Fine, 1994; Powell, Farrar, & Cohen, 1985). In contrast, some scholars argue, communally organized schools increase personalism, promote bonds between teachers and students, and encourage shared responsibilities and decision making among staff (Bryk & Driscoll, 1988; Lee & Smith, 2001). In the middle grades, academic engagement is higher at schools implementing larger numbers of practices (e.g., team teaching and interdisciplinary teams) associated with communal organization (Lee & Smith, 2001). Communal organization is more easily adapted to smaller schools, which in turn are associated with lower rates of dropout, especially among those serving low-SES populations (Rumberger, 1995).

The bureaucratic, impersonal nature of most large urban schools may provide the machinery that smooths the pathway to dropping out. Fine's ethnography of an urban school at which staff assisted students in withdrawing from school without questioning their decision to leave highlights the routinization of dropping out (Fine, 1991). Other school policies and practices, including approaches to discipline (Jordan, Lara, & McPartland, 1994), safety (DeLuca & Rosenbaum, 2001), and strategies for dealing with chronically absent students (Kelleher, 1999), may contribute to higher levels of dropout.

Although studies have advanced our understanding of the individual and institutional correlates of dropout, there has been relatively little work examining the timing of dropout. Exceptions are analysis of National Longitudinal Survey of Youth (NLSY) data (Anderson, 1999) and Current Population Survey (CPS) data (Kominski, 1990), both of which suggest that the risk of dropout increases across the high school grade levels, with ninth graders the least likely to drop out of school. Kominski estimates that, nationally, about 20% of the young adult dropouts in the NLSY left school prior to Grade 10 but suggests that there could be subpopulations for which the pre-10th-grade dropout rate was higher. With approximately one third of dropouts still in the ninth grade at the time of school leaving (Neild & Balfanz, 2006b), Philadelphia students—and their counterparts in large urban districts across the country—may constitute one of these subpopulations. Because the largest public school districts enroll the majority of the country's dropouts (Balfanz & Legters, 2004), understanding the timing of dropout in these districts can contribute to better strategies for keeping particularly vulnerable students on the path to graduation.

The 9th-Grade Transition

The high rates of course failure among urban freshmen are the consequence of a mismatch between students' academic and social skills, on the one hand, and, on the other, the organization, practices, and demands of many of the large high schools they attend. The majority of ninth graders at nonselective urban high schools enter with academic skills several years below grade level (Neild & Balfanz, 2006a). Their secondary-certified teachers are ill-prepared to teach basic literacy and numeracy—having been trained to teach algebra and literature—and many lack the materials, inclination, or both to work with ninth graders on basic skills (Balfanz, McPartland, & Shaw, 2002). Because teacher status systems within schools work to relegate the least desirable teaching assignments to the newest faculty (Kurz, 1987), ninth-grade teachers are more likely to be uncertified, new to teaching, and/or new to the school than those teaching upper-grades students (Neild & Farley, 2005). Freshmen often do not understand that they must earn credits for promotion, and by the time they do learn about graduation requirements, opportunities to pass their courses may have been long gone (Kerr, 2003). Moreover, the turbulence that often characterizes the beginning of the school year in urban high schools—overcrowded classrooms, insufficient textbooks, incomplete rosters, schedule changes, and a revolving door of teachers (Riehl, Pallas, & Natriello 1999)—increases the likelihood that ninth graders will fail courses (Weiss, 2001). The school disorganization at the beginning of the year may contribute to the high rate of absenteeism in the first few weeks of school.

High schools typically allow students greater independence than middle schools, but this freedom sometimes works to the detriment of freshman academic success. Large high schools provide abundant opportunities for skipping class to roam school hallways and hang out with friends (Kerr, 2003). There are strong pressures on students to find their place in a new social system, particularly when a number of schools "feed" into a single high school (Schiller, 1999).

Data

Sample

Data for this analysis come from PELS, which has followed the high school careers of approximately 10% of the eighth graders in the Philadelphia public schools during the 1995-1996 school year. From a file of all eighth graders provided by the School District, 45 schools were randomly selected from a pool of 93 schools. Students and their parents within those schools were randomly selected to participate in separate half-hour telephone interviews during the summer after the eighth-grade year. Both parents and students were reinterviewed during the fall/winter of the ninth-grade year (Wave 2 of the survey), during the summer after ninth grade (Wave 3), and after each subsequent school year until the fall/winter of 2000-2001 (about 6 months after what would have been their 4th year in high school). Interviews were offered in English and Spanish.

Survey data are merged with individual-level student record data on grades, test scores, behavior, attendance, and other pertinent variables maintained by the School District of Philadelphia. The School District record data are remarkably complete. A careful analysis of the PELS students who left the district before graduation indicates that none had returned to the district and mistakenly been assigned different student identification numbers.

Of the 2,933 students sampled for Wave 1, 1,470 eighth graders and their parents were interviewed during the first wave. A comparison of Wave 1 respondents and nonrespondents using district data indicates that respondent families were less likely to be receiving public assistance (42% v. 49%), whereas their target children attended school more often during eight grade (88% v. 82%) and had higher eighth-grade grade point averages (GPAs) (75 v. 73). Asian families were also underrepresented, most likely as a result of not being able to offer interviews in Asian languages. In sum, as is often the case in survey research involving disadvantaged populations,

the respondents are somewhat more advantaged than nonrespondents. However, given the challenges of contacting and interviewing urban families, these data provide an important opportunity to examine dropout and the transition to high school in a large urban district.

Included and excluded cases

Because we draw on multiple data sources, each of the analyses presented in this article draws on a slightly different sample. Appendix A describes which students were excluded from each analysis and compares included and excluded students on a number of variables.

Method

Our analysis models the predictors of dropping out of high school and includes strong pre-ninth-grade controls. The purpose of this analysis is to determine whether ninth-grade course failure and attendance adds substantially to our ability to predict dropout. For this analysis, we use logistic regression. To adjust for the underestimation of standard errors caused by the cluster sampling method, we calculate corrected standard errors using the Huber/White/sandwich estimator of variance (Huber, 1967; White, 1980). The data are also weighted to account for oversampling of students from smaller schools.

Variables

The Dependent Variable: Methodological Issues in Studying Dropout

School districts in large cities use a variety of methods to determine the proportion of students who have dropped out of school (Hammack, 1996). A detailed discussion of Philadelphia's dropout statistics and our assumptions in calculating which students dropped out of school appears in Appendix B.

We calculate dropout using each student's status as of June 2002, the time by which the students in our sample who completed high school in 6 years would have graduated. For students who left the district but for whom we have survey data, we use their self-reported educational status as of spring 2002. Students for whom we had neither survey nor district data (9.1% of the Wave 1 respondents) are not included in any of our analyses.

Students who specifically self-report being dropouts or who have district codes indicating dropout (and no survey data indicating otherwise) are coded as such in our data (see Appendix B for a full description of our

categorization of district school withdrawal codes). Students who went directly from school to a correctional facility and did not reenroll in the district are trickier to categorize. Calculations of dropout rates are inconsistent in their categorizations of incarcerated students (compare, for example, Greene, 2002; Kauffman, Alt, & Chapman, 2001). On the one hand, it is difficult to argue that incarceration is a form of voluntary school leaving, even though incarceration can seriously disrupt students' education. At the same time, excluding incarcerated students from the analysis may underestimate the true dropout rate, particularly for African Americans males, who have experienced dramatically increased rates of incarceration since 1980 (Western & Pettit, 2002). The low grades and poor attendance of many of the students in our sample who came to be incarcerated suggest that they were weakly attached to school and, had they not been incarcerated, may have dropped out in the course of things. Given the various arguments about who should be counted as a dropout, we report data for both definitions of dropout.

Independent Variables

A list of the independent variables, along with their means and standard deviations, appears in Appendix C.

Demographic and family background. Students from lower socioeconomic status (SES) families are more likely to drop out of school (Bryk & Thum, 1989; Rumberger, 1983, 1995), as are students from single-parent and stepparent families, male students, older students, and members of minority groups (Rumberger, 1983, 1987). We obtained data on students' age, race/ethnicity, and gender from school district files. From the parent interview conducted after the eighth-grade year, we obtained parent marital status, education level of the parent living in the household who reported being most involved in the teen's education, whether the family received welfare, and whether the child had ever repeated a grade.

Academic characteristics. Low academic achievement is a consistent predictor of dropping out (Goldschmidt & Wang, 1999; Swanson & Schneider, 1999; Wehlage & Rutter, 1986). We measure academic achievement with eighth-grade test scores on the multiple-choice sections of the Stanford Achievement Test (9th ed.) and the percentage of courses in which the student received a D or and F, obtained from district report card files. Although we define course failure in ninth grade as receiving an F in a course, we use a broader definition of a D or and F in eighth grade because anecdotal evidence suggests that middle school teachers are more likely to assign low passing grades in an effort to promote troublesome students out of the school. This broad definition of eighth-grade course failure is consistent with our strategy of making pre–high school controls as strong as possible.

Variables for the percentage of days attended in eighth grade and ninth grade, respectively, were drawn from school district records. Attendance is defined as the number of days attended divided by the number of days enrolled. Data on student participation in special education and English-as-a-Second-Language classes were also obtained from school district records.

Student attitudes and behaviors in eighth grade. To control for pre–high school involvement in activities that set students in opposition to the school and/or put them at risk of incarceration, which is defined as dropout in some analyses in this article, or teen pregnancy, which increases the risk of dropping out (Anderson, 1993), we created an index of responses to nine questions about how many of their friends would approve of the student's engaging in drinking, drugs, sex, and skipping school; how many of their friends liked school and did well in school; and how many had suggested illegal behaviors or stolen something worth more than $50.

Eighth-grade academic and social engagement. To control for pre–high school school–related attitudes and behaviors, we measured academic and social engagement during eighth grade. A measure for academic engagement was constructed from four questions: (a) whether the student felt that he or she was learning a lot in school, (b) whether the topics being taught were usually interesting, (c) whether he or she usually looked forward to school, and (d) whether he or she usually worked hard to do his or her best in school during eighth grade. In addition, we created an index for *engagement with teachers* that includes variables spanning academic and social engagement with adults in the school. The index includes six questions: whether students felt that their teachers (a) expected them to do their best, (b) believed they could do well in school, (c) were willing to provide extra academic help, (d) were willing to help with a personal problem, (e) cared if their students got bad grades, and (f) cared if their students did their schoolwork. Finally, we used three questions to measure eighth-grade *social engagement*: whether students felt (a) that they did not know a lot of other students at the school, (b) that no one cared about them at school, and (c) felt left out.

Dropout Calculations

The descriptive data on dropout highlight both the ubiquity of dropping out of school and dropouts' conspicuous lack of success in accumulating credits toward graduation. Table 1 presents estimates using school district data only for the educational status of the PELS students, and for comparison, the educational status of all students in the ninth-grade cohort of 1996-97. Table 2 uses combined survey and district data to provide a best estimate of what happened to the PELS students. Even with combined survey and district data, we were unable to account for the educational status of 12.9% of the cohort.

PELS students were more likely to have graduated from high school than the entire cohort of entering ninth graders, although neither graduation rate is very high (Table 1). The best estimate of students' whereabouts (Table 2) suggests that 62% of the PELS cohort had graduated from high school, either from a Philadelphia high school or from another educational institution.

According to district data, PELS students were considerably less likely to drop out of school than the cohort at large. District data suggest that as much as 24% of the PELS cohort dropped out of school (Table 1), whereas combined survey and district data estimates place the figure at 22% (Table 2), in comparison to as high as 36% for the entire cohort. Six years after beginning high school, between 4% and 6% of the cohort were still enrolled in the Philadelphia public schools, and the most recent information for 2% of the cohort indicates that they went directly to incarceration from school without returning to the district to complete their high school education.

Almost 60% of the PELS students who are coded as dropouts in district data left during their 3rd or 4th year in high school, when many students reached the legal school-leaving age in Pennsylvania (17 years). Despite having been enrolled in high school for several years, however, the majority of the PELS dropouts were listed as 9th or 10th graders when they left school. Almost half (46%) were listed as 9th graders at the time of dropout. Another 31% had not been promoted beyond the 10nth grade. Among the 107 PELS dropouts who were listed as 9th graders at the time of leaving, 33% were in their 3rd, 4th, or 5th year of high school.

A credit analysis for the ninth-grade PELS dropouts indicates that the majority were seriously behind on their course credits, despite having been in high school for a number of years. Eighty-eight percent had earned no more than three credits during their entire time in high school, and three quarters had earned no more than two credits. It is not the case, then, that many of the ninth-grade dropouts were, for all intents and purposes,

Table 1
Estimates of Educational Status Using June 2002 School District Data, for PELS Students and the Entire Cohort of 1996-1997 First-Time Ninth Graders (in percentages)

Educational Status	District Estimate for PELS Students	Entire Cohort of 1996-1997 First-Time Ninth Graders
Graduated	56.1	48.9%
Still in Philadelphia public schools	4.5	4.4
Left district for another school	12.8	7.6
Nonvoluntary reasons for leaving[a]	0.21	1.8
Incarcerated	2	1.8
Dropouts or possible dropouts		
Dropped out	13.7	21.3
Left district, reason unknown	6.5	9.8
Status unknown[b]	4.2	4.4
Total potential dropouts	24.4%	35.5%
Total	100%	100%
N	1,457	14,652

Note: PELS = Philadelphia Education Longitudinal Study.
a. Primarily deceased and illness.
b. Have not been withdrawn officially, but do not have active status.

upperclassmen, but were still technically classified as freshmen because of a missing required ninth-grade credit.

Models Predicting Dropout

A series of logistic regression models, shown in Table 3, estimates the effects of various characteristics on dropping out and the independent role played by ninth-grade experiences. In these models, we define *dropout* as a student whose code in the district's data indicates that he or she has dropped out, has left the district with no reason given for departure, or whose status is unknown (i.e., has no dropped-out code but is not enrolled, either) and for whom we had no survey information to indicate otherwise. Likewise, students who self-identified as dropouts in survey data are coded as such. We dropped from the analysis students who, according to district data, had been incarcerated or had left for another school or district and for whom we had no disconfirming survey information. There are more inclusive ways to define dropout (e.g., including incarcerated students) and more restrictive ways (e.g., only those who self-identify or are listed in district data as

Table 2
Best Estimate for Educational Status of PELS Students, Using Combined Survey and District Data

Educational Status	Percentage
Graduated	
From Philadelphia public schools	57.9
From another school or district	3.9
Still in school	
In Philadelphia	5.9
In another school or district	0.8
Nonvoluntary reasons for leaving[a]	
From Philadelphia public schools	0.3
From another school or district	0.07
Incarcerated	
Students enrolled in Philadelphia public schools at time of incarceration	2
Students who were enrolled in other schools	0
Dropouts or possible dropouts	
Dropped out from Philadelphia public schools	14.8
Dropped out from another school	1.3
Left district, reason unknown, no additional information	3.9
Status unknown[b]	2.3
Total potential dropouts	22.3
Left district for another school, 6-year status unknown	6.7
Total	100
N	1,457

a. Primarily deceased and illness.
b. Have not been withdrawn officially, but do not have active status.

dropouts). There are good arguments for each definition, but the definition of dropout makes very little difference in the regression estimates that appear below.

Model 1 incorporates basic demographic characteristics of gender and race/ethnicity. There are no statistically significant differences at the $p < .05$ level in the odds of dropping out between African American students (the reference category) and White or Asian students. Consistent with national data, Latino students are at greater risk than African Americans for dropping out, and male students are more likely than female students to leave school without graduating.

Model 2 adds measures of student family background: welfare receipt, parent education, and family structure. In this equation, welfare receipt increases the odds of dropping out by about half. In comparison to students

Table 3
Logistic Regression Models Predicting High School Dropout

Independent Variables	(Model 1)	(Model 2)	(Model 3)	(Model 4)	(Model 5)
Demographic characteristics					
White	1.03	1.34*	1.67*	1.63*	1.56†
	(0.18)	(0.19)	(0.34)	(0.36)	(0.34)
Latino/Hispanic	1.94***	1.81***	2.12**	2.01**	1.98**
	(0.35)	(0.28)	(0.48)	(0.42)	(0.41)
Asian	0.78	1.09	1.77	2.11	1.96
	(0.39)	(0.54)	(0.93)	(1.2)	(1.13)
Native American	4.2	3.53	3.78	5.53†	5.66
	(5.13)	(3.81)	(4.34)	(5.29)	(5.44)
Male	1.79***	1.82***	1.52*	1.60**	1.72**
	(0.24)	(0.27)	(0.28)	(0.29)	(0.3)
Family background (8th grade)					
Family receives welfare		1.55*	1.39	1.2	1.21
		(0.28)	(0.3)	(0.29)	(0.29)
Primary parent is a high school graduate		1.03	1.4	1.46†	1.46†
		(0.17)	(0.3)	(0.31)	(0.3)
Primary parent has at least a 2-year college degree		0.45***	0.76	0.73	0.78
		(0.09)	(0.17)	(0.18)	(0.21)
Parents married		0.72†	0.89	0.84	0.85
		(0.13)	(0.17)	(0.16)	(0.16)
Eighth-grade controls					
Standardized math test score			0.99*	0.99†	0.99
			(0.0006)	(0.0006)	(0.0006)
Standardized reading test score			0.99	0.99	0.99
			(0.0006)	(0.0006)	(0.0006)
Percentage of final grades of D or F			1.02***	1.01*	1.01**
			(0.004)	(–0.004)	(0.004)

(continued)

Table 3 (continued)

Independent Variables	(Model 1)	(Model 2)	(Model 3)	(Model 4)	(Model 5)
Percentage days present			0.98**	0.99	0.99
			−0.008	−0.01	−0.01
Academic engagement			0.65*	0.76	0.71†
			−0.13	−0.15	−0.14
Social engagement			0.98	0.99	1.01
			−0.12	−0.13	−0.13
Engagement with teachers			1.53†	1.41	1.50†
			−0.42	−0.38	−0.39
Risk-taking friends			1.44**	1.41*	1.39**
			−0.19	−0.2	−0.17
Other Pre-ninth-grade controls					
Age			2.02***	1.90**	1.81**
			−0.35	−0.36	−0.32
Previous grade repetition			1.18	1.18	1.2
			−0.2	−0.23	−0.23
Special education, 8th grade			0.57**	0.59*	0.62*
			−0.11	−0.13	−0.15
English as a second language status, 8th grade			0.93	1.19	1.11
			-0.42	−0.51	−0.48
Ninth-grade experiences					
Percentage of courses failed				1.02***	1.02***
				−0.004	−0.004
Percentage of days present				0.99*	0.98**
				−0.006	−0.006
Pseudo R^2	0.02	0.05	0.2	0.26	0.27
Log pseudo-likelihood	−721.24	−700.84	−587.87	−542.45	−563.68
n	1,319	1,319	1,319	1,319	1,351

†$p < .10$. *$p < .05$. **$p < .01$. ***$p < .000$

whose primary parent did not finish high school, those with a parent with at least a 2-year college degree had their odds of dropping out reduced by more than half. When these family background variables are held constant, both White and Latino students are at higher risk of dropping out than African American students.

Model 3 incorporates the full set of 8th-grade variables to control for academic history and attitudes toward school already present before students entered 9th grade. A number of academic characteristics predict dropping out. First, students with stronger math skills are more likely to remain in school. The variable for math achievement is measured in scale scores; on average, then, an 80-point increase in the math score (about half a standard deviation) would result in a 10% decrease in the odds of dropout. The nonsignificance of the reading test score is not just because of its collinearity with the math score; it is not a predictor even when the variable for math score is removed from the model.

In addition, students with larger percentages of Ds or Fs in eighth grade have higher odds of dropping out: An increase of 20 percentage points in the percentage of courses failed would increase the odds of dropout by about 40%. Better eighth-grade attendance was also associated with decreased odds of dropping out.

Greater academic engagement in eighth grade decreases the odds of dropout once students enter high school. Although descriptive analyses indicated that dropouts evidenced less social engagement and engagement with teachers, neither variable predicted eventual dropout when other controls were included.

It is notable that students who were in special education programs in eighth grade (and who likely continued in special education in ninth grade) are less likely to drop out of high school than other students. We posit that the small, often self-contained, classes that special education students experience may build attachment to school. In addition, a paucity of opportunities in the formal and informal labor market for students with special needs may also reduce the opportunity costs of staying in school.

Even with substantial controls, including previous grade repetition, student age is significantly associated with dropping out. Each additional year older a student is at the start of high school more than doubles the odds of early school leaving. Furthermore, students who reported having more friends involved in a greater number of risk-taking behaviors had substantially increased odds of dropping out. A 1-point increase (on a 5-point scale) in risk-taking behaviors among friends increases the odds of dropout by more than 40%.

When we introduce variables for 9th-grade attendance and the percentage of courses failed in Model 4, the importance of the 9th grade in students' educational careers becomes apparent. Despite the number and breadth of controls for pre–high school experiences and dispositions, the percentage of courses failed in 9th grade is a strongly significant predictor of eventual dropout. We used the percentage of courses failed (ranging from 0% to 100%) rather than a dichotomous variable for nonpromotion to 10th grade because we wanted to distinguish between those who might have been close to being promoted, credit wise, and those who had accumulated few or no credits. An increase of 20 percentage points in the percentage of courses failed—the equivalent of one extra failed course in a five-course load—would increase the odds of dropping out by more than one third. Likewise, each additional week of school attended decreased the odds of dropout by 7%.

Model 5 includes the same independent variables as Model 4, but with dropout defined much more narrowly. In this model, incarcerated students are defined as nondropouts. Ninth-grade course failure continues to be a significant predictor, although its magnitude is reduced. Given the strong pre–high school controls and very conservative definition of dropout, Model 5 presents additional evidence that the experiences of the ninth grade have a substantial and independent effect on the likelihood of graduation among urban students.

Conclusion

The analyses presented in this article suggest several conclusions. First, the academic difficulty that students experience in ninth grade is not simply a reflection of what students bring with them when they enter high school. Rather, the experience of the ninth-grade year contributes substantially to the probability of dropping out, despite controls for demographic and family background characteristics, previous school performance, and pre–high school attitudes and ambitions. Although dropping out indeed may be the culmination of a process with roots in students' earliest educational experiences, these analyses suggest that there are specific points in students' educational careers where degree completion hangs in the balance and educational trajectories are reshaped. Difficulty in navigating of these treacherous waters, even for individuals who appear similar in other measurable respects at the time of entrance to high school, substantially increases the probability of leaving high school without ever finishing.

One implication of these findings is that decreasing the dropout rate, at least among urban students, will require paying attention to the critical high school transition year. Put more strongly, we argue that the inner-city dropout epidemic cannot be ameliorated unless high schools organize themselves to help students through the transition to high school. High schools will need to reimagine the experiences of upperclassmen as well, lest those grades become versions of the present ninth-grade debacle, but addressing the transition year is an important first step.

The PELS data set does not include information on school organization, meaning that it cannot provide direct evidence of the impact of school organization on student academic success during 9th grade, and by implication, on the incidence of high school dropout. However, a null model estimated using hierarchical methods indicates that about half of the variance in dropping out occurs at the school level and half at the individual level. And recent data from comprehensive school reform projects suggest that changes in the way high schools do business can decrease the 9th-grade course failure rate. An example is the Talent Development High School model, one of the federally designated comprehensive school reform models for high schools, which has had substantial success in helping schools to organize themselves for 9th-grade success (Legters et al., 2002) and a strong positive impact on 9th-grade attendance and credits earned, as well as promotion to 10th grade (Kemple, Herlihy, & Smith, 2005).

The Talent Development high school model addresses the high school transition with several changes that are not typical of large urban neighborhood high schools. To create a space where students are well known by their teachers and peers and where they are less likely to be bullied or harassed by upperclass students, the Ninth Grade Academy is located in a physically separate section of the school building. Teachers in this school-within-a-school structure are divided into teams made up of math, English, social studies, and science faculty who teach the same groups of students. These teams of teachers, led by a Team Leader, meet frequently throughout the year to discuss the academic progress of their ninth graders (McPartland & Jordan, 2004).

Because most urban 9th graders enter high school with weak math and reading skills but are increasingly expected to pass college preparatory courses such as Algebra to be promoted to 10th grade (Neild & Balfanz, 2006a), students experience a core curriculum with a "double dose" of English and mathematics. In math, 9th graders take a first-semester "transition math" course that backfills on intermediate skills like decimals, fractions, and negative and positive numbers. The first-semester English course works with the students on strategic reading skills (McPartland & Jordan, 2004).

Although projects like the Talent Development High School model provide evidence that massive ninth-grade failure (and, we suspect, high rates of dropping out) is not inevitable, one of the sobering lessons from comprehensive reform projects is that turning around ninth-grade student outcomes to even a moderate extent is an enormous undertaking. A dropout prevention class here, a mentor there, a new math curriculum, rewards for attendance or good grades, a new discipline policy—none of these piecemeal solutions are likely to have an appreciable impact on educational outcomes for urban students who are vulnerable to academic failure. The issue is too complex, the problems of traditional high school organization too interlinked. Instead, we will need to think of quite radical solutions.

In fact, substantially affecting ninth-grade failure, and the associated dropout rate, may require doing away with the high school transition entirely or else allowing students to make a transition to a high school that is much smaller than the typical urban neighborhood high school. In this era of increased interest in experimenting with nontraditional school structures, perhaps students should have more options to remain in the same school from K-12 or to attend small, flexibly operated schools where "being known" is taken for granted.

Appendix A
Inclusions, Exclusions, and Definitions of Dropout

To be included in any analysis in this article, students had to be eighth graders in Philadelphia public schools during the 1995-1996 school year and promoted to ninth grade at the end of that year. Ninth graders who were new to the district in September 1996 or who entered the district after ninth grade, as well as the 13 students in the sample who were retained in eighth grade at the end of the 1995-1996 school year, are not included in the analysis.

We rely primarily on school district data to determine dropout, graduation, or continued enrollment at the end of 6 years (or in a few cases, 4 years, as we describe below) after starting high school. However, 239 students interviewed in Wave 1 subsequently left the district for another school or district or had an unclear status in district records. For students for whom we had no reliable district data, we examined self-reports of graduation, dropout, or continued enrollment in school from 107 students who completed Wave 6 interviews (Fall 2000/Winter 2001). For these 107 students, educational status is available only for 4 years after beginning high school, because that is when Wave 6 data was collected. In comparison with students for whom we have district data, those for whom we have only survey data were as likely to have dropped out, more likely to be still in school, and less likely to have graduated; the differences in the last two categories, in particular, likely result from the survey data being from

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Appendix A (continued)

2000-2001 rather than from June 2002. Later data would likely show more dropouts and graduates. However, it is unlikely that the change in status of a few students would substantially alter the regression results presented in this article.

Students for whom educational status could only be determined from interview data were coded as dropouts, graduates, or still in school on the basis of their self-reports, except in cases where students claimed, in contradiction to school district records, that they were attending or had graduated from a Philadelphia public high school. Students who left the district but were not interviewed in Wave 6 were classified as "dropouts" if they were so characterized by district records or "unknown" if district records indicated that they had left for another school or district. Finally, four students who were listed as dropouts in district data but who reported that they had graduated from a school in another district were coded as graduates. We had no information on the dropout or graduation status of 9.1% of the original sample.

Our regression models incorporate variables for ninth-grade attendance and grade point average (GPA). One hundred eighteen students who left or dropped out before the end of ninth grade do not have final attendance or GPA variables, or any report card data from earlier marking periods that could be substituted. These students had to be dropped from the regression analysis. Two thirds of the students who left the district during ninth grade went to another school, according to district data; a comparison of students who left and those who stayed indicated that the leavers had similar GPAs and attendance but were less likely to receive public assistance (20.6% v. 26.2%) and much more likely to be White (49% v. 23.5%). One quarter of those who left were coded as "dropouts" by the district; these students had lower eighth-grade GPAs (74 v. 79) and attendance (81% v. 88%) but were similar to those who remained in the district in terms of racial or ethnic background and receipt of public assistance. In sum, those who left the district in ninth grade—and who consequently cannot be incorporated into our regression models—are a mixed bag: Some students were more privileged than those who remained in the district (and were likely moving to suburban or private high schools), and students with a low GPA and spotty attendance in eighth grade increased the probability of their dropping out. Furthermore, given that students who dropped out in ninth grade and were still counted as dropouts in June 2001 represented only 5.4% of the total dropouts from the cohort, it is clear that we do not exclude a large percentage of the dropouts.

Appendix B
Defining Dropout

Several issues complicate the accurate assessment of who has dropped out of school. These issues can be summarized by considering the two variables in the district data that must be combined to determine which students have left the district and why they left. The first is a "status" variable, which indicates whether a student

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Appendix B (continued)

is currently enrolled, graduated, has withdrawn from the district (for any reason, including moving from the area), or has an unknown status. Each year, students must be "claimed" by a school to be considered enrolled; in theory, this means that a student must have actually shown up at school during that year. Students who are not claimed by a school but who have not officially withdrawn from the system are classified as "unknown." In Philadelphia, there are very few students who fall into any category other than enrolled, withdrawn, or graduated. In June 2000, less than 3% of the students in the PELS sample were unaccounted for by the district. The percentage of "unknowns" in Table A1 is higher because for our analysis we also classify students as unknown if they left the district but have no codes listing their reason for leaving.

Appendix C
Description of Variables (unweighted)

Variable	Description	*M*	*SD*
Dependent variable		.25	—
Dropped out	1 = Dropped out by the end of the 6th year after beginning high school		
Demographic characteristics			
Race/ethnicity	(1 = indicated race/ethnicity)		
African American		.64	—
Asian		.02	—
Latino/Hispanic		.10	—
Native American		.002	—
White		.24	—
Sex	1 = male	.48	—
Age	Age in years on September 1, 1996	14.29	1.53
Family background			
Welfare status	1 = family received welfare in eighth grade	.26	—
Primary parent did not graduate from high school	1 = parent does not have high school diploma (omitted category)	.23	—
Primary parent is a high school graduate	1 = parent finished high school but did not attend any college	.59	—
Primary parent attended college	1 = parent attended any college	.17	—
Primary parent marital status	1 = parent is married when child is in eighth grade	.44	—
Eighth-grade achievement			
Math score	Math score on SAT-9 test, in scaled scores	410.66	163.35
Reading score	Reading score on SAT-9 test, in scaled scores	420.87	188.11
Course failure	Percentage of eighth-grade courses that were Ds or Fs	18.23	22.55

(continued)

Appendix C (continued)

Variable	Description	*M*	*SD*
Eighth-grade engagement			
Attendance	Percentage of days present in eighth grade	88.11	12.81
Academic engagement	Summative scale of responses to "You are learning a lot in school," "The topics you are studying are usually interesting," "You usually looked forward to school," and "You usually worked hard to do your best in school this past year." (Range 1 to 4; higher value means higher engagement.) Cronbach's alpha is 0.71.	3.27	0.53
Social engagement	Summative scale from student's Likert-type responses to whether they "didn't know a lot of kids," "felt left out," and "felt that no one cared." (Range 1-4; higher value means more engagement.) Cronbach's alpha is 0.63.	3.22	0.65
Engagement with teachers	Summative scale from student's responses to how true it was (*very true, somewhat true, not true*) that their teachers "expected them to do their best," "believed they could do well in school," "were willing to provide extra help if you needed it," "were willing to help with a personal problem," "cared if their students got bad grades," and "cared if their students did their school work." (Range 1-3; higher value means more engagement.) Cronbach's alpha is 0.74.	1.42	0.34

(continued)

Appendix C (continued)

Variable	Description	*M*	*SD*
Other controls			
Risk-taking friends	Summative scale from student's count (*all, most, half, few, none*) of friends in eighth grade who "do well in school," "work hard on school work," "skip school," "suggest illegal acts," "have stolen something worth $50," "don't like school," "think drinking is OK," "think drugs are OK," and "think it's OK to have sex." (Range 1-5; higher value means more risk taking among friends.)	1.89	0.69
Grade repetition	1 = repeated a grade, first through eighth	0.34	—
Special education	1 = received special education in eighth grade (excluding mentally gifted)	0.12	—
ESOL	1 = received English-as-a-second-language services in eighth grade	0.02	—
Ninth-grade experiences			
Course failure	Percentage Fs, ninth grade	25.65	33.2
Attendance	Percentage of days attended	79.63	21.57

(continued)

Students can become classified as "withdrawn" either by formally advising the school of their intention to leave or by being removed from the rolls by school officials after they have been truant for some time. After 10 consecutive absences, students are placed on an "Absent on Roll" (AOR) list, after which point they can be dropped by the schools as long as they are above the compulsory school age—that is, at least 17 years old. In practice, there can be lag time between the point at which a student's attendance indicates that he or she has stopped coming to school and removal from the school rolls. As a result, the true dropout rate at any given point is almost always higher than the dropout rate derived from the proportion of students who have formally "dropped out"—or been removed—from the district.

Philadelphia has approximately 30 codes to describe students' reasons for leaving, but as is the case with the "status" codes, only a fraction of those codes is used with any frequency. The most commonly used codes are "moved from Philadelphia" (31.7% of the Philadelphia Education Longitudinal Study [PELS] sample who ever left the district for any reason); over compulsory school age, an indicator of dropout (30%); left for a private school in Philadelphia (14%); and removed nonvoluntarily, the vast majority of which were assigned to a correctional institution (11.8%). Whether a student who has left the district is coded as leaving for another school system or dropping out altogether can make all the difference in a district's dropout rate. Clearly, there is plenty of room for misinformation, assumptions, or active deception by school personnel (Hammack, 1986), particularly when students have not formally withdrawn from the district. At the same time, strict district policies regarding who can be classified as having transferred to another school can make the dropout rate seem even higher than it actually is.

In Philadelphia, the vast majority of students who, according to district data, left for private school or another school district exited between eighth and ninth grade, or between their 1st and 2nd years in high school. Of those who left the district for another school, about half left before high school began; about three quarters left before the 2nd year in high school. The PELS survey data show that parents of students who left for another school were more likely to be college educated than those whose children remained in the district. White male students are particularly likely to have left for another school: Eighteen percent of the White male students in the PELS sample had left for another school by the end of the sophomore year (compared to 6.2% of the Black male students). The concentration of the codes for leaving for another district in the first 2 years of high school, as well as the more advantaged status of the families who left, suggests to us that there is a fair amount of credibility to these particular codes.

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Predictors of Categorical At-Risk High School Dropouts

Suhyun Suh, Jingyo Suh, and Irene Houston

The authors attempted to identify key contributing factors to school dropout among 3 categories of at-risk students: those with low grade point averages, those who had been suspended, and those from low socioeconomic backgrounds. Logistic regression analysis of the data, which were derived from the National Longitudinal Survey of Youth–1997 (U.S. Bureau of Labor Statistics, 2002) indicated that student dropout rates were affected differently by students' membership in the 3 at-risk categories.

For educators and counselors concerned with the well-being of society, school, family, and, particularly, the individual student, identifying the predictors of high school failure is a critical task. By identifying predictors early, counselors and other school personnel may be able to generate effective prevention and intervention strategies. A great deal of research has been conducted in an effort to identify factors that contribute to dropping out of school before high school graduation (Rumberger, 1983; Suh, 2001; Valdivieso, 1986; Vallerand, Fortier, & Guay, 1997; Velez, 1989). Variables that influence school dropout appear to come from various domains, such as individual, family, and school (Chavez, Belkin, Hornback, & Adams, 1991; National Collaboration for Youth, 1989; Wells, 1990). Many researchers who are interested in the issue of school dropout have attempted to identify students who are, in fact, at increased risk of dropping out. Some researchers (e.g., Janosz, Blanc, Boulerice, & Tremblay, 2000) have categorized at-risk students as those who exhibit academic, behavioral, or attitudinal problems that lead to school dropout. For our study, the term *at-risk* refers to aspects of a student's background and environment that may lead to a higher risk of her or his educational failure.

Most of the research on at-risk students uses models with multiple variables that influence at-risk behavior. For example, Battin-Pearson et al. (2000) claimed that a comprehensive model that includes multiple problematic sources for an individual is likely to better predict early high school dropout. Although such comprehensive models provide useful information for helping to understand why adolescents drop out, they are too broad to generate a guide that is focused enough to allow for the development and implementation of effective interventions. In addition, when intervention is delayed until multiple problems are manifested, intensive efforts may be needed, and the impact of the intervention strategy may be reduced. Thus, when it comes to reducing dropout, counselors and other professionals need to identify single models that can be used earlier in the educational process to guide intervention.

The purpose of this study was to identify and compare different factors that contribute to school dropout rates among three groups of at-risk students, thereby facilitating the implementation of effective dropout prevention strategies. We selected for analysis three at-risk categories that are frequently identified as strong predictors for school dropout. They are low socioeconomic status (SES), poor academic achievement, and suspension from school.

Low SES is one of the most frequently cited predictors of school dropout (Bradby, Owings, & Quinn, 1992; Gruskin, Campbell, & Paulu, 1987; McMillen & Kaufman, 1997; Orr, 1987; Weis, Farrar, & Petrie, 1989). Gruskin et al. noted that "when socioeconomic factors are controlled, the differences across racial, ethnic, geographic, and other demographic lines blur" (p. 5). Orr also pointed out that educational and socioeconomic backgrounds together are the strongest determinants of whether a student will drop out of school. Orr's statement posited that along with low SES, poor academic achievement is one of the strongest predictors in the etiology of dropout. Battin-Pearson et al. (2000) agreed that poor academic achievement is the strongest predictor of dropout. Deviant behavior has also been well documented to have a direct impact on high school dropout rate. Deviant behaviors are often expressed as disruptive school behaviors and frequent delinquent behaviors that increase the risk of school dropout for many students (Farmer & Payne, 1992; Gruskin et al., 1987; Reyes, 1989; Tindall, 1988). In the current study, suspension was considered to be symptomatic of deviant behaviors.

On the basis of the aforementioned theoretical perspectives, this study attempted to identify the most significant contributing factors to school dropout by categorizing students according to membership in a particular at-risk group. Three approaches were used. First, the importance of 20 commonly referenced predictors, including GPA, suspension, and low SES, were tested. Second, the differences and commonalities in predictors between at-risk and non-at-risk individuals were compared. Finally, the differences in predictors among the three at-risk groups were investigated.

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Method

Data

The data used in this article were drawn from the National Longitudinal Survey of Youth 1997 (NLSY97; U.S. Bureau of Labor Statistics, 2002). The NLSY97 consisted of a nationally representative sample of approximately 9,000 youth who were 12–16 years old as of December 31, 1996; Round 1 of the survey was conducted in 1997. In the first round, each eligible youth and one of her or his parents completed personal interviews. The youth have been interviewed on an annual basis since 1997. Data collected from Rounds 1–4 of the NLSY97 were released in 2002 by the U.S. Bureau of Labor Statistics.

Because the primary variable of interest was high school dropout predictors, the sample was limited to youth who had either graduated from high school (completers) or who had not enrolled in high school (dropouts) in 2000. Students who were still enrolled in high school were excluded from the sample because they belonged to neither of the above-referenced two groups. Adolescents who had previously dropped out of school but came back to school and graduated or received the general equivalency diploma (GED) were classified as completers. The researchers identified a total of 4,327 adolescents for the study: 1,054 adolescents who dropped out of high school and 3,273 adolescents who graduated from high school or received the GED.

Variables Contributing to Dropout

The NLSY97 (U.S. Bureau of Labor Statistics, 2002) collected extensive information about participants' behavioral, personal, educational, and familial experiences over the years. Among the data collected, 135 variables merited consideration as possible contributing factors to dropping out of school because they were mentioned in several other empirical studies of dropout behavior. The final 20 variables of the 135 selected for analysis were chosen on the basis of high correlation and statistical significance with respect to school dropout behavior. These 20 variables represented personal, behavioral, familial, and school-related characteristics of the participants. They were

1. low grade point average in the eighth grade (GPA)
2. suspended students (SUSPD)
3. low SES (SES)
4. number of days late to school without excuse (LATE)
5. number of days absent from school (ABSENT)
6. positive perception of teacher (TEACHR)
7. number of household members (HHSIZE)
8. highest education attainment of mother was high school or less (HGCPRM)
9. the student lived with both biological parents as of 1996 (BIO)
10. gender of youth (GENDER)
11. threat of being hurt in school (THREAT)
12. number of fights at school (FIGHT)
13. behavioral and emotional problems (BEHAV)
14. total number of schools attended (SCHATT)
15. use of school teacher/counselor versus family members as resource for personal problems (PROB1)
16. use of school friends versus family members as resource for personal problems (PROB2)
17. percentage of peers planning to go to college (PCOLL)
18. mother's permissiveness (MPERM),
19. first sexual experience occurred at age 15 or below (SEX)
20. optimistic about future (OPTIM)

Thirteen of the 20 variables were qualitative, and 7 were quantitative variables. The 7 quantitative variables were LATE, ABSENT, HHSIZE, BEHAV, FIGHT, SCHATT, and PCOLL. For example, a student was assigned a GPA code value of 1 if she or he had a low GPA (half Cs and half Ds or below) in eighth grade and a value of 0 if she or he had a medium/high GPA. The qualitative variables were coded 1 if the statement was true or present and 0 otherwise, with the exception of GENDER, where 1 = *male* and 0 = *female*. For example, a student was assigned a GPA code value of 1 if she or he had a low GPA in eighth grade and a value of 0 if she or he had a medium/high GPA. The quantitative variables indicate the initial survey value except for the BEHAV variable. The BEHAV factor indicates the index of behavioral and emotional problem ranging from 1 to 8.

In the coding procedure, a special focus was given to GPA, SUSPD, and SES factors because these three predictors have been widely used by researchers and have been sources of controversy. To identify low performers, GPA in the eighth grade was considered. The category for low GPA was a grade of "half Cs and half Ds" or below. GPA in ninth grade was also considered but was not included in the analysis because some adolescents dropped out before completing ninth grade, and this information was missing for many adolescents. Eight hundred students had a low GPA (521 boys and 279 girls). Suspended students were those who had been suspended from school at least once (n = 1,486; 925 boys and 561 girls). A family income below $30,000 in 1997 was adopted as the criterion for low SES. Different levels of family income and parents' highest education attainment were considered as alternative criteria for low SES status but were found not to be a better fit than family income below $30,000. There were 2,509 students in this category (1,187 boys and 1,322 girls).

Results

Descriptive and Correlation Analysis

Twenty measured independent variables and scales were used as independent variables. The dependent variable DROPOUT

represented high school dropout/completion. If a student graduated from high school with a diploma, the dependent variable was coded as 0. If a student did not graduate and was not enrolled in high school in the survey year (i.e., 2000), the dependent variable was coded as 1. Table 1 shows descriptive statistics, Pearson correlation, and partial correlations between the dependent variable DROPOUT and predictors of dropout factors. The mean of the qualitative variables indicates the percentage of adolescents in each category. The mean value of DROPOUT, for example, indicates the percentage of students who dropped out of school (i.e., 24%). The results of the Pearson correlation between the dependent variable and predictors of dropping out were significant ($p < .01$) with the exception of THREAT and MPERM. Six predictors—TEACHR, BIO, PROB1, PROB2, PCOLL, and OPTIM—showed negative signs of the correlation coefficients, indicating that the likelihood of dropping out of school decreased if the statement of predictors was true. The remaining 14 predictors showed positive correlation coefficients with DROPOUT. The highest correlation existed between DROPOUT and low GPA ($r = .355$). In addition to GPA, SUSPD, BIO, SES, SCHATT, PCOLL, SEX, and OPTIM showed a stronger relationship with DROPOUT than with the other predictors.

TABLE 1

Descriptive Statistics and Correlation Coefficients

Variable	*M*	*SD*	Pearson Correlation With DROPOUT	Partial Correlation
DROPOUT	0.24	0.43	—	—
GPA	0.18	0.39	.355**	—
SUSPD	0.34	0.48	.307**	—
SES	0.58	0.49	.210**	—
LATE	3.23	8.10	.116**	.049**
ABSENT	5.73	8.77	.220**	.154**
TEACHR	0.84	0.36	−.161**	−.088**
HHSIZE	4.54	1.63	.094**	.080**
HGCPRM	0.58	0.49	.159**	.113**
BIO	0.46	0.50	−.233**	−.134**
GENDER	0.49	0.50	.075**	.001
THREAT	0.94	4.98	.026	−.013
FIGHT	0.38	1.82	.184**	.128**
BEHAV	2.24	0.93	.162**	.105**
SCHATT	2.36	0.99	.195**	.124**
PROB1	−0.50	0.52	−.122**	−.093**
PROB2	−0.03	0.99	−.125**	−.095**
PCOLL	−3.47	1.05	−.199**	−.120**
MPERM	0.46	0.50	.002	.003
SEX	0.41	0.49	.292**	.168**
OPTIM	0.79	0.41	−.194**	−.161**

Note. DROPOUT = high school dropout/completion; GPA = low grade point average in the eighth grade; SUSPD = suspended students; SES = low socioeconomic status; LATE = number of days late to school without excuse; ABSENT = number of days absent from school; TEACHR = positive perception of teacher; HHSIZE = number of household members; HGCPRM = highest education attainment of mother was high school or less; BIO = the student lived with both biological parents as of 1996; GENDER = gender of youth; THREAT = threat of being hurt in school; FIGHT = number of fights at school; BEHAV = behavioral and emotional problems; SCHATT = total number of schools attended; PROB1 = use of school teacher/counselor versus family members as resource for personal problems; PROB2 = use of school friends versus family members as resource for personal problems; PCOLL = percentage of peers planning to go to college; MPERM = mother's permissiveness; SEX = first sexual experience occurred at age 15 or below; OPTIM = optimistic about future.
**$p < .01$, two-tailed.

The Pearson correlation, however, was typically influenced by other variables. For example, GPA was closely related to both LATE and ABSENT and, therefore, it would be expected that net influence of the predictors on DROPOUT would be smaller than the Pearson correlation. The partial correlation coefficient in Table 1 provides an indication of the relationship between each predictor and DROPOUT when the influence of three main predictors—GPA, SUSPD, and SES—were held constant. The highest partial correlation is reported for SEX, with the coefficient of .168. When squared, the partial correlation ($.168^2 = 0.03$ or 3%) led us to conclude that 3% of the variation in DROPOUT was due to the impact of SEX. The high partial correlation coefficient was recorded for SEX, OPTIM, and ABSENT. There was a significant change between Pearson and partial correlation coefficients for GENDER, BIO, SCHATT, PCOLL, and SEX. This might have been due to the relationship between the given predictors and three control factors. In order to investigate the role of each predictor on the dropout rate, we conducted a logistic regression analysis.

Logistic Regression Analysis

Logistic regression is useful for situations in which the dependent variable is dichotomous or categorical. It is similar to a linear regression model but adopts nonlinear fitting procedure to limit the dependent variable within the 0–1 ranges.

Table 2 displays the estimated regression coefficients, standard errors, and related statistics pertaining to the 20 independent variables. As expected, most of the coefficients (B) showed the same sign as the correlation coefficients. A positive sign of the coefficient indicates higher probability of dropping out as the value of a predictor increases (Cizek & Fitzgerald, 1999). For example, the coefficient of GPA, 1.310, indicates that the log odds (probability) of dropping out of school rise by 1.310 when the adolescent's high school GPA fell from high (GPA = 0) to low (GPA = 1). The difference in the sign between the correlation coefficient and logistic coefficient occurred on LATE and DROPOUT, where the correlation coefficient was positive whereas the regression coefficient was negative. Although the Pearson correlation between LATE and DROPOUT was significant ($p < .01$), LATE was not a significant factor of DROPOUT in the logistic regression analysis ($p < .01$). This implies that LATE was influenced by other predictors, and the net impact on DROPOUT was minimal.

Fourteen of the 20 predictors were statistically significant ($p < .01$) according to *t*-test and Wald statistics. In addition to LATE, five other insignificant predictors included TEACHR, GENDER, PROB1, PROB2, and MPERM. Results showed

TABLE 2

Logistic Regression Analysis for Variables Predicting High School Dropout

Variable	*B*	*SE*	Wald	Sig.	Exp(B)
Constant	−2.830	.335	71.488	.000	0.059
GPA	1.310	.099	175.238	.000	3.706
SUSPD	0.521	.095	30.179	.000	1.683
SES	0.562	.096	34.402	.000	1.755
LATE	−0.001	.005	0.019	.892	0.999
ABSENT	0.032	.005	38.984	.000	1.033
TEACHR	−0.216	.111	3.776	.052	0.806
HHSIZE	0.126	.025	25.077	.000	1.134
HGCPRM	0.579	.094	38.402	.000	1.785
BIO	−0.691	.097	50.827	.000	0.501
GENDER	0.132	.091	2.112	.146	1.141
THREAT	−0.035	.012	8.529	.003	0.965
FIGHT	0.160	.034	21.988	.000	1.173
BEHAV	0.116	.044	6.888	.009	1.123
SCHATT	0.215	.042	26.109	.000	1.240
PROB1	−0.146	.284	0.264	.607	0.864
PROB2	−0.162	.149	1.178	.278	0.850
PCOLL	−0.175	.041	18.251	.000	0.839
MPERM	−0.013	.087	0.021	.884	0.987
SEX	0.648	.091	51.149	.000	1.912
OPTIM	−0.862	.100	74.293	.000	0.422

Note. N = 4,327. Percentage correctly predicted: 81.7%. Nagelkerke R^2: .407. −2 log likelihood: 3427.3 ($p < .001$).Wald = Wald statistic; Exp(B) = the change in the likelihood of dropping out of school associated with a one-unit change in the predictor variable; GPA = low grade point average in the eighth grade; SUSPD = suspended students; SES = low socioeconomic status; LATE = number of days late to school without excuse; ABSENT = number of days absent from school; TEACHR = positive perception of teacher; HHSIZE = number of household members; HGCPRM = highest education attainment of mother was high school or less; BIO = the student lived with both biological parents as of 1996; GENDER = gender of youth; THREAT = threat of being hurt in school; FIGHT = number of fights at school; BEHAV = behavioral and emotional problems; SCHATT = total number of schools attended; PROB1 = use of school teacher/counselor versus family members as resource for personal problems; PROB2 = use of school friends versus family members as resource for personal problems; PCOLL = percentage of peers planning to go to college; MPERM = mother's permissiveness; SEX = first sexual experience occurred at age 15 or below; OPTIM = optimistic about future.

that GPA, SUSPD, and SES were strong predictors of DROPOUT, as existing research has shown. In addition to the three widely accepted predictors, HGCPRM, BIO, SEX, and OPTIM had large slope coefficients.

Because the logistic regression is not a linear probability model, its coefficients are not directly comparable across the predictors. Information about changes in the probability of dropping out of school is reported in the Exp(B) coefficients in the SPSS output (Pedhazur, 1997). Exp(B) in the last column of Table 2 indicates the change in the likelihood of dropping out of school associated with a one-unit change in the predictor variable. Because Exp(B) was the natural logarithm of B, an Exp(B) equal to 1 indicates no change in the likelihood of dropping out associated with changes in the predictor variables (Cizek & Fitzgerald, 1999). Values of Exp(B) less than 1 indicate that the probability of dropping out of school decreased with changes in the independent variables. For example, students who were optimistic about the future (OPTIM) were about 58% (1–0.422 = .578) less likely to drop out of school than students with a pessimistic outlook about the future. The largest Exp(B) value was reported for GPA, indicating that low GPA would make the greatest contribution to dropout rate. This was followed by the predictors of SEX, HGCPRM, SES, and SUSPD, with Exp(B) ranging from 1.9 to 1.5.

The entire regression model had a −2 log likelihood ratio of 3427.4, which was significant ($p < .001$); Nagelkerke R^2 was .407. This model correctly predicted 81.7% of all adolescents' cases.

Regression Analysis by At-Risk Group

The regression in Table 2 confirms the impact of three at-risk predictors on the dropout rate, but the model did not differentiate how predictors influenced low-GPA students and medium/high GPA students, suspended students and nonsuspended students, or low-SES and medium/high-SES students differently. In order to investigate the impact of at-risk factors on dropping out of school, we conducted a secondary analysis by grouping adolescents according to at-risk status. Table 3 summarizes the results from the multivariate logistic regression analysis according to the at-risk factors GPA, SUSPD, and SES. Model 1 compares the group characteristics of low-GPA (Group 1) and medium/high-GPA (Group 0) students. A similar classification procedure was followed for the construction of Models 2 and 3.

Model 1 in Table 3 shows that the impact of TEACHR, GENDER, THREAT, FIGHT, and BEHAV on DROPOUT was quite different for low-GPA students and medium/high-GPA students. The five predictors had a significant impact on dropout rate for medium/high-GPA students, whereas they were not critical factors for low-GPA students. In the two groups in Model 1, SUSPD, SES, SCHATT, and SEX were more important predictors of DROPOUT for medium/high-GPA students than they were for low-GPA students. On the other hand, OPTIM was more important for low-GPA students than it was for medium/high-GPA students. Model 1 also indicates that the slope of predictors varied significantly in two groups. For example, the magnitude of TEACHR and SES changed by .214 (−.285 to −.071) and .185 (.603 to .418), respectively, whereas changes in other predictors were less than 0.10.

Model 2 shows that differences in predictors between suspended students (Group 1) and nonsuspended students (Group 0) were relatively small compared to the other two models. Differences did exist for TEACHR and PROB2, where direction of impact on DROPOUT was reversed in the two groups. However, the impact of the directional reversal in the two groups proved to be insignificant. A noticeable difference in the value of coefficients occurred for GPA, SEX, and OPTIM. The slope of the three predictors was higher for the nonsuspended group than was the slope for suspended students, suggesting a larger impact of the three independent variables for nonsuspended students than for suspended students. Sixteen out of 19 predictors were

TABLE 3

Logistic Regression Coefficients (B) for Three At-Risk Models

Variable	Model 1 (GPA)		Model 2 (SUSPD)		Model 3 (SES)	
	Group 0	Group 1	Group 0	Group 1	Group 0	Group 1
Constant	−3.058**	−0.778	−3.277**	−2.085**	−2.460**	−2.413**
GPA	—	—	1.492**	1.148**	1.412**	1.293**
SUSPD	0.554**	0.429*	—	—	0.321	0.603**
SES	0.603**	0.418*	0.481**	0.643**	—	—
LATE	0.004	−0.012	0.012	−0.006	0.010	−0.003
ABSENT	0.030**	0.045**	0.034**	0.032**	0.036**	0.030**
TEACHR	−0.285*	−0.071	0.024	−0.358*	−0.064	−0.275*
HHSIZE	0.113**	0.159**	0.109**	0.141**	0.111*	0.127**
HGCPRM	0.599**	0.552**	0.590**	0.560**	0.399*	0.650**
BIO	−0.682**	−0.711**	−0.658**	−0.732**	−0.565**	−0.712**
GENDER	0.238*	−0.202	0.016	0.265*	0.286	0.061
THREAT	−0.059**	−0.007	−0.052	−0.032*	−0.022	−0.034**
FIGHT	0.200**	0.079	0.223**	0.146**	0.259**	0.124**
BEHAV	0.179**	0.004	0.107	0.145*	0.043	0.134**
SCHATT	0.235**	0.151*	0.275**	0.159**	0.379**	0.171**
PROB1	−0.174	0.043	−0.909	0.430	−0.105	−0.124
PROB2	−0.179	−0.187	0.256	−0.493*	−0.178	−0.175
PCOLL	−0.184**	−0.170*	−0.224**	−0.135*	−0.327**	−0.126**
MPERM	0.019	−0.064	−0.007	−0.022	0.148	−0.078
SEX	0.681**	0.576**	0.818**	0.440**	0.597**	0.654**
OPTIM	−0.840**	−0.939**	−0.994**	−0.659**	−1.264**	−0.698**

Note. Sample size *(N)*: Model 1–3,273 for Group 0 (medium/high-GPA) and 1,054 for Group 1 (low-GPA); Model 2–2,841 for Group 0 (nonsuspended students) and 1,486 for Group 1 (suspended students): Model 3–1,818 for Group 0 (medium/high-SES students) and 2,509 for Group 1 (low-SES students). Group 0 indicates a dummy value 0 for GPA, SUSPD, or SES, and Group 1 represents a dummy value 1 for GPA, SUSPD, or SES. Percentage correctly predicted: Model 1, 84.0% for Group 0 and 71.1% for Group 1; Model 2, 86.9% for Group 0 and 72.2% for Group 1; Model 3, 88.2% for Group 0 and 77.0% for Group 1. Nagelkerke R^2: Model 1, .314 for Group 0 and .277 for Group 1; Model 2, .325 for Group 0 and .339 for Group 1; Model 3, .375 for Group 0 and .375 for Group 1. –2 log likelihood: Model 1, 2491.7 for Group 0 and 910.5 for Group 1; Model 2, 1803.6 for Group 0 and 1595.5 for Group 1; Model 3, 1034.7 for Group 0 and 2365.5 for Group 1. GPA = low grade point average in the eighth grade; SUSPD = suspended students; SES = low socioeconomic status; LATE = number of days late to school without excuse; ABSENT = number of days absent from school; TEACHR = positive perception of teacher; HHSIZE = number of household members; HGCPRM = highest education attainment of mother was high school or less; BIO = the student lived with both biological parents as of 1996; GENDER = gender of youth; THREAT = threat of being hurt in school; FIGHT = number of fights at school; BEHAV = behavioral and emotional problems; SCHATT = total number of schools attended; PROB1 = use of school teacher/counselor versus family members as resource for personal problems; PROB2 = use of school friends versus family members as resource for personal problems; PCOLL = percentage of peers planning to go to college; MPERM = mother's permissiveness; SEX = first sexual experience occurred at age 15 or below; OPTIM = optimistic about future.
*$p < .05$, two-tailed. **$p < .01$, two-tailed.

significant for suspended students compared with 11 predictors for nonsuspended students. Five predictors that were significant for Group 1 but not significant for Group 0 were TEACHR, GENDER, THREAT, BEHAV, and PROB2.

The results for Model 3 were similar to those for Model 2. The two most important predictors of DROPOUT in Model 3 were GPA and OPTIM. In addition to GPA and OPTIM, BIO and SEX were also important factors for medium/high-SES students (Group 0), and HGCPRM was important for low-SES students (Group 1). Fifteen predictors were significant for Group 1, and 11 were significant predictors for Group 0. The four predictors that were not significant for the low-SES group (Group 1) were SUSPD, TEACHR, THREAT, and BEHAV.

When the predictors of DROPOUT were compared among three at-risk models (Group 1 in three models), the rate and significance of predictors associated with the likelihood of dropping out of school was significantly different, especially for TEACHR, GENDER, THREAT, FIGHT, and BEHAV. Students' perception about teacher was an important predictor for SUSPD and SES at-risk students ($p < .05$) but not for low-GPA students. The same was true for THREAT, FIGHT, and BEHAV factors. GENDER was significant only for the SUSPD model ($p < .05$). The B coefficients of predictors were generally greater for the SUSPD model than for the other two models with the exception of ABSENT, HHSIZE, HGCPRM, PCOLL, SEX, and OPTIM. ABSENT, HHSIZE, PCOLL, and OPTIM predictors were stronger for the GPA model than for the SUSPD or SES model, whereas HGCPRM, SCHATT, and SEX predictors were stronger for the SES model than for the other two models. The –2 log likelihood ratios in all three at-risk models were statistically significant ($p < .01$), and Nagelkerke R^2 ranged from .287 to .375.

Discussion

Do students at risk of dropping out face the same problems and difficulties regardless of their risk factors? Should the same intervention strategy be used with all students to improve the

high school completion rate? Some researchers have indicated that students who dropped out of school were not all alike but rather they differed according to personal and social characteristics (Rumberger, 1987; Wehlage, Rutter, Smith, Lesko, & Fernandez, 1989). The findings in the current study revealed that students who dropped out were affected differently depending on at-risk status. Although a single parsimonious model (Table 2) showed that most of the predictors (14 of the 20) were significant factors for DROPOUT only eight variables were significant in all three models: ABSENT, HHSIZE, HGCPRM, BIO, SCHATT, SEX, PCOLL, and OPTIM (Table 3). This result suggests that different dropout prevention strategies should be used on the basis of at-risk group status.

When students are categorized according to their at-risk status, family-related variables (e.g., HHSIZE, HGCPRM, and BIO) have been found to be strong indicators for the dropout rate, regardless of the individual's at-risk status. In addition, the coefficients for family variables were consistent across the models, indicating the stable relationship between DROPOUT and family-related predictors in all three models. ABSENT and SCHATT are considered to exhibit school-related predictors. Researchers have reported frequently that both ABSENT and SCHATT are predictors of dropout rates, and our study confirmed that finding. However, the level of relationship was somewhat different for two predictors. ABSENT had small but stable coefficients ranging from .030 to .045 in three models. On the other hand, the value of the slope of SCHATT was high and had a wide range, from .151 (Group 1, Model 1) to .379 (Group 0, Model 3). When compared with at-risk groups (Group 1), non-at-risk groups (Group 0) had large coefficients for SCHATT in all three models, indicating that frequent school changes increased the likelihood of dropping out of school more for non-risk-students than they did for at-risk students.

SEX and OPTIM were considered to be representative of student behavior factors. The findings confirm that, for each of the three models, having sex before age 15 significantly increased the possibility that a student would drop out of school. The value of the coefficient of SEX on DROPOUT was similar in Models 1 and 3. Significant differences occurred when the SUSPD predictor was controlled. For the nonsuspended students, having sex at an earlier age increased the likelihood of dropping out of school nearly twice as much as for the suspended students. Students who were optimistic about the future were less likely than their nonoptimistic counterparts to drop out of school, regardless of at-risk group type. In addition to GPA, OPTIM had the largest coefficient among 19 predictors and was the most significant factor in reducing dropout rate. The impact of OPTIM was about the same for two groups in Model 1. The slope of OPTIM, however, was significantly different in the two groups in Models 2 and 3. In the at-risk/non-at-risk comparison of SUSPD and SES models, the coefficient for OPTIM was significantly larger for the non-at-risk group than it was for the at-risk group. This implies that having optimism about the future was a more important characteristic for the general high school population than for SUSPD or SES at-risk students.

In addition to the eight previously mentioned predictors, TEACHR, FIGHT, BEHAV, and PROB2 were partially significant in relation to the three at-risk models. TEACHR, FIGHT, and BEHAV are significant ($p < .05$) in the SUSPD and SES models but were not significant in the GPA model; PROB2, on the other hand, was significant in the SUSPD model only. This result suggests that students at-risk of dropping out faced different problems and difficulties; thus, different intervention strategies are required to improve high school completion rate.

Counseling Implications

The results of this study show that low GPA was not the only major factor leading to dropping out of school. Forty three percent of low-GPA students successfully completed high school. They had a high possibility of dropping out of school, particularly when they had high absenteeism or a pessimistic outlook about the future. Counselors may need to use individual and group counseling with students who exhibit high absenteeism to identify their attendance patterns and the factors contributing to their absence. It is also important for counselors to empower students who have a low GPA. This can be accomplished by helping students develop a successful outlook about the future that will lead to graduation from high school. These results suggest the need for an emphasis on career counseling before the eighth grade. Such counseling could focus on the student's level of aspiration and might emphasize the importance of believing in oneself as a person who can achieve.

Students who were suspended at least once were affected by as many as 16 factors that were identified as significant independent variables. Among these, fighting and having a greater number of household members significantly increased the possibility of dropping out of school for suspended students. In particular, male students were more likely to drop out when they had been suspended. However, suspended students had a higher possibility of graduation if more of their peers were planning to attend college, if they lived with biological parents, if they had positive regard for teachers, if they talked with peers about their problems, or if they had an optimistic view about the future. These findings suggest that when behavioral problems are predominant factors for school failure, multifaceted intervention approaches need to be generated. The formation of mixed counseling groups, consisting of group members who provide a positive peer influence on the at-risk students, might be beneficial for such students. Considering their penchant for talking with peers concerning their problems, peer-helper interventions would be an effective alternative to traditional counselor interventions. Counselors could also develop interventions that teach communication

skills and conflict resolution skills, thus leading to improved family relationships and student–teacher relationships for these at-risk students who are likely to experience relationship problems at home and in school.

As with the suspended at-risk students, dropout behavior among low-SES students was affected by as many as 15 variables, indicating the need for more comprehensive interventions for low-SES at-risk students than with the other two at-risk groups. Among those variables, low educational attainment (less than high school) of the maternal parent, frequent school changes, and having sex at early ages were significant indicators for increasing the likelihood of dropping out of school for low-SES at-risk students. In addition to the suggested interventions for the low performers and suspended students, the implementation of abstinence sex education in school might be an option for this group of students, considering that having sex before age 15 greatly increased school dropout rates.

Another factor that influenced low-SES students was living with a mother who did not have a high school education. This finding suggests that counselors need to take an active role in providing extra academic support for students from low-SES families. Counselors should also understand how important it is for them to provide parenting education to mothers who do not have a high school education. Moving from one school to another also appeared to increase the possibility of dropping out of school for students from low-SES backgrounds. It might be necessary for counselors to assist this group of at-risk students in the transition to the new school environment by developing a system of welcoming the new student and providing continuing support to the student throughout the school year. As is the case for suspended students, the low-SES at-risk student was more likely to complete high school if he or she had an optimistic view about the future, lived with a biological parent, and had a high percentage of peers going to college. Many of the aforementioned interventions for suspended students can also be applied to this group of students.

Across the three categorical at-risk models studied, an optimistic view about the future was found to be the most critical factor in decreasing the school dropout rate for all three types of at-risk students. This finding is consistent with research (Vallerand et al., 1997) in which self-determined motivation was presented as a key variable in relation to the prediction of dropping out of school. This result may imply that career-based classroom guidance before the eighth grade geared toward developing an optimistic career plan for the future is critical for school counselors. Houston (1999) found that the potential benefits of career education and exploration are directly linked to school success for middle-school students. Research (Blum & Jones, 1993; Slicker & Palmer, 1993) also supports the use of effective mentoring in increasing aspirations and forming positive outlooks among at-risk high school students. Effective mentoring should be provided by caring, committed adults who will be able to uphold the integrity of the mentoring program.

According to Croninger and Lee (2001), a teacher's guidance and assistance was identified as a critical variable in decreasing the probability of dropping out by almost half. When integrating this finding into the current research, it seems that the importance of the counselor's role as a consultant for and a collaborator with teachers is critical for preventing students from dropping out of school.

Ultimately, the previously mentioned findings point to the need for school counselors to take a proactive role in meeting the varied needs of students with different at-risk dropout statuses. Counselors should be knowledgeable about factors that contribute to students' dropout behavior and generate prevention and intervention strategies to help as many students as possible to successfully complete their high school education. In order to achieve this goal, school counselors need to view themselves as advocates, consultants, and collaborators, as well as counselors, as is specified in the ASCA National Model (American School Counselor Association, 2003), which stresses the school counselor's leadership role in helping all students achieve academic, career, personal and social development in school.

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Risk Factors and Levels of Risk for High School Dropouts

The study in this article identifies three major risk categories of high school dropouts and evaluates the impact of possible prevention strategies. As students accumulate these risks, they became more likely to drop out and prevention programs become less effective. Additionally, it was found that factors influencing the decision to drop out vary for different sources of risk, and thus there should be a range of prevention strategies offered to accommodate for this variance.

Since the 1970s, there has been a growing effort to improve high school graduation rates. In 1983, the National Commission on Excellence in Education sounded the alarm because U.S. educational standards had fallen behind other major industrialized countries (National Commission on Excellence in Education, 1983). The commission called for a reform of the nation's educational system in fundamental ways and a renewal of the nation's commitment to high-quality education. Though these issues received increased attention following the commission's call, little research has been devoted to how much the likelihood of dropping out of school increases when students accumulate multiple risk factors.

Studies on high school dropouts have primarily been concerned with the identification of characteristics associated with dropout risk, and researchers have consistently found them in varied domains such as school, family, community, and the students themselves (Farmer & Payne, 1992; Gruskin, Campbell, & Paulu, 1987; Kronick & Harcis, 1998; Orr, 1987; Payne, 1989; Reyes, 1989; Roderick, 1993; Suh, Suh, & Houston, in press; Tindall, 1988; Valdivieso, 1986; Vallerand, Fortier, & Guay, 1997; Wehlage, 1989). Many researchers simply identified the multiple factors contributing to school dropout.

For example, Coley (1995) presented school-related problems such as disliking school, receiving poor grades, not being able to keep up with schoolwork, and not getting along with teachers as four of the top six reasons for dropping out. Devine (1996) identified parents' low educational attainment, the number of household members, and lack of motivation as reasons why students with a low socioeconomic status (SES) drop out of school. Ekstrom, Goertz, Pollack, and Rock (1986) found that dropouts tend to be racial minorities from poor families. Students' deviant and resistant behaviors also were identified as strongly related to dropping out of school. Fine and Rosenberg (1983) indicated that high school dropouts challenge the dominant belief that education leads to success in life. Pittman (1986) and Tidwell (1988) pointed out that students' resistance and resentfulness toward the school community was a major variable in their decision to drop out.

Students' low level of engagement in their education has been considered by other researchers (Caraway, Tucker, Reinke, & Hall, 2003) as an important factor leading to higher dropout rates. Finn (1989) also proposed that behaviors associated with dropping out of school stem from a withdrawal from school life. A study of elementary and middle school students found that school variables were consistent predictors of alienation from school. The researchers noted that contrary to the generally accepted theory that alienation from school is a steady developmental process, alienation from school may not be overtly manifested until students reach high school.

Researchers also have found that the combination of two or more risk factors increases the likelihood of dropping out (Croninger & Lee, 2001; Farmer et al., 2004). When a student is exposed to multiple risk factors, he or she is likely to be less motivated to do schoolwork and to eventually drop out of school (Suh et al., in press). Farmer et al. also found that youth who experienced a single risk factor in early adolescence had moderately increased levels of school dropout, whereas youth with a combination of two or more risk factors had significantly higher dropout rates. They also examined the extent to which single- and multiple-risk profiles were evident in cross-sectional samples from inner-city and rural areas.

Some researchers have tried to explain this dropout phenomenon by using interaction or cause-and-effect relationships of contributing factors. For example, Holt (1995) suggested that low achievers usually come to school lacking basic skills that are prerequisites for learning. Academic failure increases students' alienation from school, leading to absenteeism, which in turn increases dropout risk. Devine (1996) also speculated that potential dropouts might have behavioral problems as a result of lack of interest in school as well as poor academic performance.

Early prevention is one of the most often cited strategies for school completion. For example, child behavior researchers observed that early-school-age children with early assault conduct problems are at high risk for school dropout as well as substance abuse, violence, and delinquency in their later years. Consequently, developing treatment strategies to reduce conduct problems when aggression is in its more malleable form prior to age 8, and thus interrupting its progression, is of considerable benefit to both families and society (Webster-Stratton & Reid, 2003).

When a student is exposed to multiple risk factors, he or she is likely to be less motivated to do schoolwork and to eventually drop out of school.

Researchers also have reported connections between measures of academic performance in early elementary school and dropout behavior before high school graduation (Barrington & Hendricks, 1989; Ensminger & Slusarcick, 1992). They emphasized the need to examine causes of dropping out before high school because many students drop out before the 10th grade. These observations are consistent with the suggestion in the growing literature on adolescent development that, because changing the performance path at the high school level is very difficult, school performance must be improved at an earlier point in the student's development to improve adolescent achievement (Entwisle, 1990). In a rural middle school study, Edmondson and White (1998) indicated that younger students were more open to support services, while older students might be more focused on peer approval and their need for independence. Also, because older children have been in school longer, they may have a stronger defeatist attitude than the younger students.

Among the characteristics associated with dropout, many researchers have identified three main risk indicators. They include poor academic performance (or low grade point average), low SES, and deviant behavior (or behavioral problems) (Ekstrom et al., 1986; Phelan, 1992; Rumberger, 1987; Suh et al., in press). Regardless of the source of risk factors, it is noteworthy that multiple risk factors contribute to and accelerate the risk of dropping out of school.

PURPOSE OF THIS STUDY

The purpose of this study was to identify the factors contributing to high school dropout and the extent of their impact on the likelihood of dropping out of school. Based on previous research, this study classified students into the three major at-risk categories of a low grade point average (GPA), low SES, and behavioral problems. Within each of these three at-risk groups, the study also examines variables that interact to increase the risk of dropping out. Four research questions were tested: (a) What are the most significant risk factors leading to school dropout? (b) How much does the combination of two or more risk factors accelerate the likelihood of dropping out compared to a single risk? (c) What are the predictive indicators within each risk group and how different are they across the different types of at-risk groups? (d) What kinds of prevention strategies are effective for different sources of risk?

METHOD

Data

Data from the National Longitudinal Survey of Youth (NLSY97) database from the U.S. Department of Labor were used in this study. Participants were selected using a nationally representative sample of approximately 9,000 youths who were 12 to 16 years old as of December 31, 1996. The Department of Labor conducted the initial survey (Round 1) in 1997. In that round, both the eligible youth and one of that youth's parents received hour-long personal interviews. Youths have been reinterviewed annually since then. Data from rounds 1–5 of the NLSY97/01 were released in August 2003. The data in this report excluded 2,792 students who either were enrolled in high school or were not enrolled but working toward a General Educational Development (GED) certificate, because they had neither completed high school nor dropped out. Composing the final sample were 3,111 males and 3,081 females who either completed high school or dropped out without receiving a diploma or a GED by December 31, 2000. Among the 6,192 students in the sample, 5,244 completed high school with a diploma or GED, and 948 did not.

Procedure

To identify the common causes of dropping out from the NLSY97, this study considered 180 variables as possible contributing factors of dropping out of school. Drawn from numerous literary sources and empirical studies, these variables represent personal, behavioral, familial, school-related, and community-related aspects of students' school performance. Multiple logistic regression using the forward selection procedure was used to systematically screen all variables and arrive at a good parsimonious model (Tamhane & Dunlop, 2000).

The screening process yielded 16 statistically significant predictors of high school dropout. They include (a) low grade point average in the eighth grade (GPA); (b) low socioeconomic status (SES); (c) students who were suspended (SUSPENSION); (d) students' expectations to stay in school the next year (INSCHOOL); (e) enrichment risk index (ENRICHMENT); (f) number of days absent from school (ABSENT); (g) whether the student lived with both biological parents as of 1996 (BIOPARENT); (h) physical environment risk index (PHYSINDEX); (i) first sexual experience at age 15 or prior (FIRSTSEX); (j) number of household members (HHSIZE); (k) percentage of peers planning to go to college (PEERS); (l) residence in metropolitan area (MSA); (m) region (REGION); (n) positive perception toward teachers (TEACHERS); (o) number of fights at school (FIGHT); and (p) if the student had been threatened with harm at school (THREAT).

Six are quantitative or composite index variables, and the remaining 10 variables are qualitative. The six quantitative/index variables are absenteeism, household size, number of fights at school, percentage of peers planning to go to college, enrichment risk index, and physical environment risk index. Quantitative variables were transformed into standard normalized variables for ease of interpretation. The qualitative variables were coded 1 if the statement was true or present and 0 if not. For example, a student was assigned a low GPA code value of 1 if he or she received a low GPA in eighth grade and a value of 0 if he or she received a medium or high GPA. The quantitative variables indicate the initial survey value. Two index variables, enrichment risk index and physical environment risk index, were calculated from a group of survey questions included in the NLSY97/01. The first includes educational enrichment activities and resources, and the second includes home and community environments.

The three variables of low GPA, suspension, and low SES received special attention in the coding procedure because these have been widely identified by researchers as major risk factors to dropout. Low performers were identified as students with an eighth-grade GPA of "half Cs and half Ds" or below (Suh et al., in press). The suspension category included students who had been suspended at least once. Low SES indicated students from families whose annual income was below $30,000 in 1997. To distinguish between these risk factors and other predictors of dropping out, *risk factors* or *risk backgrounds* refers to students displaying one or more of the above three criteria. *Predictors of dropping out* refers to the remaining 13 independent variables.

The dependent variable (DROPOUT) represents high school dropout/completion. If a student graduated high school with a diploma or received a GED, the dependent variable is coded as 0. If a student did not graduate and was not enrolled in high school in the survey year of 2001, the dependent variable is coded as 1.

RESULTS

Table 1 shows two models (Model 1 and Model 2) of predictors of school dropouts. The columns of Table 1 denote the value of the regression coefficient, the significance level, and the probability values of the 16 predictors. Model 1 presents the initial estimation of school dropout with three at-risk factors (academic risk, low socioeconomic status, and behavioral problems) included in the regression model. The statistical significance of Model 1 points to a strong association between each risk factor and the likelihood of dropping out. The probability values represent the expected change in the probability of dropping out of school for every one-standard-deviation increase in the predictor variable. The change in the probability is obtained by subtracting 1 from Exp(B), where the positive value represents an increase in the likelihood of dropping out and the negative value indicates a decrease. For example, academic risk (low GPA) increases the probability of dropping out by 115.9% (2.159 − 1 = 1.159 or 115.9%), while socioeconomic risk (SES) and behavioral risk (SUSPENSION) increase the likelihood of dropping out by 75.0% and 77.5%, respectively.

Early prevention is one of the most often cited strategies for school completion.

Many students (1,395 youths) are exposed to multiple risk factors (two or three risks) rather than one alone. For example, 183 students have both academic and socioeconomic risks. If there exists a systematic relationship among risk factors, then multicollinearity is present and statistical difficulties arise in fitting the regression model unless extra predictor variables are deleted (Pedhazur, 1997). To minimize multicollinearity in the regression model and to facilitate the interpretation of risk backgrounds, we introduced the variable (RISK) of number of risk factors on behalf of the three at-risk variables of low GPA, low SES, and suspension. RISK is coded from 0 (no risk) to 3 (all three background risks). Model 2 shows predictors of school dropouts when the number of risk factors is included as a predictor. All other predictors remain the same as Model 1. The estimated coefficient on the RISK variable indicates that students with one risk factor have an 89.3 percent higher likelihood of dropping out than students who do not.

Table 2 is constructed to show four different logistic regression models according to the number of risk factors present. Because the number of risk factors is the most significant predictor of dropout and has one of the largest odds value, we need to

Table 1. Summary of Logistic Regression Analysis for Variables Predicting Dropout (Baseline Model)

Variable	Model 1			Model 2		
	B	Sig.	Exp(B)	B	Sig.	Exp(B)
GPA	.769	.000	2.159	—	—	—
SES	.559	.000	1.750	—	—	—
SUSPENSION	.574	.000	1.775	—	—	—
RISK	—	—	—	.638	.000	1.893
INSCHOOL	−.237	.000	.789	−.235	.000	.791
ENRICHMENT	−.273	.000	.761	−.273	.000	.761
ABSENT	.230	.000	1.258	.230	.000	1.258
BIOPARENT	−.672	.000	.511	−.653	.000	.520
PHYSINDEX	.207	.000	1.230	.200	.000	1.222
FIRSTSEX	−.233	.000	.792	−.233	.000	.792
HHSIZE	.206	.000	1.228	.205	.000	1.227
PEERS	.171	.000	1.186	.717	.000	1.186
MSA	.324	.000	1.383	.318	.000	1.375
REGION	4.835	.001	125.816	4.638	.002	103.309
TEACHERS	.998	.002	2.714	1.010	.002	2.746
FIGHT	.126	.001	1.135	.123	.002	1.131
THREAT	−.132	.019	.876	−.130	.019	.878
Constant	−3.403	.000	.033	−3.389	.020	.034

Note. Nagelkerke R^2 = .305 for Model 1 and .304 for Model 2. −2 log likelihood = 4105.397 for Model 1 and 4108.945 for Model 2. Percentage correctly predicted for high school completers = .853 for Model 1 and .967 for Model 2. Percentage correctly predicted for dropouts = .222 for Model 1 and .217 for Model 2. N = 6,192.

further investigate the role of this variable in the model. We estimated the probability of dropping out for four different groups of students by the number of risk factors: (a) students without any risk factors (N = 2,878); (b) students with only one risk factor regardless of the source of the risk (N = 1,915); (c) students with two risk factors (N = 1,112); and (d) students with all three risk factors (N = 283). The predictor variables used for analysis are the same as the predictors in Table 1 except that the variable "number of risk factors" is controlled instead of one of the other predictors.

In Table 2, the statistical significance of the predictors and the impact of possible prevention—the odds, Exp(B)—are significantly different from the results in Table 1. In the 0 Risk model, significant predictors of school dropout are expectations to stay in school, enrichment index, whether the student lived with both biological parents, physical environment risk index, household size, absenteeism, age of first sexual experience, and percentage of peers going to college. In the 1 Risk model, predictors are similar to the 0 Risk model with the exception that student residing in a metropolitan area, the number of fights in school, and whether the student has been threatened with physical harm in school are significant. In the 2 Risks model, the physical environment risk and the percentage of peers going to college are no longer significant. The most dramatic change is made in the 3 Risks model, where only four predictors (whether the student lived with both biological parents, household size, region, and absenteeism) are significant; all other predictors significant in the previous models are no longer significant.

The odds column, Exp(B), varies significantly depending on the number of risks. In general, the odds of a unit or one-standard-deviation change in a predictor variable are large when the number of risks

Table 2. Odds Ratio of the Multivariate Logistic Regression Model According to the Number of Risks

Variable	0 Risk	1 Risk	2 Risks	3 Risks
INSCHOOL	.723 **	.766 **	.834 **	.934
ENRICHMENT	.561 **	.738 **	.855 *	1.155
ABSENT	1.468 **	1.170 **	1.214 **	1.548 **
BIOPARENT	.414 **	.658 **	.525 **	.442 *
PHYSINDEX	1.449 **	1.273 **	1.066	1.144
FIRSTSEX	.714 **	.766 **	.841 *	1.022
HHSIZE	1.198 *	1.169 **	1.188 **	1.431 **
PEERS	1.376 **	1.215 **	1.095	1.162
MSA	1.452	1.473 **	1.386 *	.684
REGION	.078	1.964	10516.73 **	194220.7 *
TEACHERS	.445	1.202	1.906	6.946
FIGHT	.952	1.513 **	1.151 **	.981
THREAT	1.176	.636 **	.869	1.053
Constant	.103	.134	.078	.087 *

Note. Nagelkerke R^2 = .225 for 0 Risk; .181 for 1 Risk; .146 for 2 Risks; .214 for 3 Risks. –2 log likelihood = 822.101 for 0 Risk; 1524.784 for 1 Risk; 1278.908 for 2 Risks; 342.266 for 3 Risks. Percentage correctly predicted for high school completers = .997 for 0 Risk; .974 for 1 Risk; .924 for 2 Risks; .730 for 3 Risks. Percentage correctly predicted for dropouts = .097 for 0 Risk; .111 for 1 Risk; .227 for 2 Risks; .600 for 3 Risks. N = 2,878 for 0 Risk; 1,915 for 1 Risk; 1,112 for 2 Risks; 283 for 3 Risks. *p < .05. **p < .01

is small. For instance, a one-standard-deviation increase in the enrichment index decreases the probability of dropping out by 43.9% (.561 – 1 = –43.9 or –43.9%) for the 0 Risk model. In the 1 Risk and 2 Risks models, increasing the enrichment index by one standard deviation decreased the likelihood of dropping out by 26.2% and 14.5%, respectively. This implies that prevention strategies become less effective as the number of risks increases to two or three.

To determine the predictive indicators within each risk group (low SES, low GPA, and suspension) and how they differ from each other, we ran another logistic regression analysis for students who drop out of high school. Because we wanted to determine the differences between each at-risk group, each sample included students with only one of the three risk backgrounds (see Table 3). The first model (0 Risk) is the same as the one in Table 2. For the remaining three models (low GPA, low SES, and suspension), the samples are mutually exclusive because the sample for multiple risks such as a low academic performer with behavioral problems is excluded. The sample size is 465 for low GPA, 644 for low SES, and 806 for those who had been suspended.

Models in Table 3 show that the magnitude of the odds and the level of significance of predictors are quite different for each risk factor. The GPA model shows statistical significance for the four independent variables of whether the student expects to be in school the next year, absenteeism, age of first sexual experience, and percentage of peers going to college. The actual dropout rate for this type of at-risk student is 15.9% (74 out of 465), the lowest among the three types of risk. In the SES model, the statistically significant predictors are enrichment index, physical environment risk index, household size, whether the student expects to be in school the next year, and age of first sexual experience. The dropout rate for students with a low socioeconomic status is 16.6% (107 out of 644). The model of students who are suspended shows that as many as nine independent variables are significant predictors of school dropout. The actual dropout rate for this type of at-risk student is 18.1% (146 out of 806), the highest among the three types of at-risk.

The only significant predictor (p < 0.05) in all four models is whether the students expect to attend school the upcoming year; the other predictors are

Table 3. Odds Ratio of the Multivariate Logistic Regression Model for Single At-Risk Students

Variable	GPA		SES		SUSPENSION	
INSCHOOL	.674	**	.676	**	.783	*
ENRICHMENT	.799		.658	**	1.162	*
ABSENT	1.367	*	1.131		.591	*
BIOPARENT	.919		.562		1.352	*
PHYSINDEX	1.070		1.278	**	.850	**
FIRSTSEX	.738	*	.667	**	1.150	
HHSIZE	1.047		1.286	**	1.252	
PEERS	1.300	*	1.154		1.686	*
MSA	1.289		1.382		20.823	**
REGION	1.184		.176		1.178	
TEACHERS	.871		8.644		1.569	
FIGHT	1.435		1.742		.632	**
THREAT	.684		.397		.091	*
Constant	.164		.131		.841	

Note. Nagelkerke R^2 = .119 for GPA; .226 for SES; .212 for SUSPENSION. –2 log likelihood = 370.774 for GPA; .226 for SES; .212 for SUSPENSION. Percentage correctly predicted for high school completers = .987 for GPA; .961 for SES; .965 for SUSPENSION. Percentage correctly predicted for dropouts = .055 for GPA; .170 for SES; .171 for SUSPENSION. N = 465 for GPA; 644 for SES; 806 for SUSPENSION.
*p < .05. **p < .01.

partially significant depending on the association of background risks. This implies that the student's expectation to be in school next year (INSCHOOL) is the most reliable predictor regardless of risk type. Because the actual significance of any predictor varies across the risk factors, possible prevention strategies also will vary in their effectiveness.

DISCUSSION

Results from the analysis of the National Longitudinal Survey of Youth database provide valuable information on the characteristics of high school dropouts and possible strategies for dropout prevention and intervention efforts. First of all, as is extensively addressed in the existing literature, we found the three risk factors of academic failure, low socioeconomic status, and behavioral problems to have a major impact on the decision to drop out of school. Besides these three risk factors, 13 other predictors (see Table 1) also were found to be statistically significant. However, the purpose of this study was not limited to identifying risk variables, but also to further examine the extent of their impact on the likelihood of dropping out of school and how much the combination of two or more risk factors accelerates the likelihood of dropping out. We also examined what are the predictive indicators within each risk group and how they differ across the different types of at-risk groups. Ultimately, this study was intended to explore what kind of prevention strategies would be effective for at-risk adolescents with different sources of risk.

While it appears that academic risk (low GPA) has the greatest impact on dropout rates, the current results indicate that all three factors (low GPA, socioeconomic status, and behavioral problems) have an almost equivalent effect on dropout rates when examined independently. Therefore, developing dropout prevention programs that target students with only an academic risk factor may not be as effective as possible. First, programs that target students with academic risk alone may overlook students who display one or both of the other two risk factors but not a low GPA. Second, because students with a low GPA may very likely have other risk factors that result in a low GPA, the program may not sufficiently meet their needs. According to our data, pro-

grams that target students at-risk academically have a very high possibility of including students with other risks. The number of students who have only a low GPA is 7.5% (465 of 6,192). However, 8.8% (543 of 6,192) displayed both a low GPA and behavioral risks, 3.0% (184 of 6,192) displayed a low GPA and low SES, and 4.6% (283 of 6,192) displayed all three risks. The total number of students with more than one risk is 16.3% (1,009 of 6,192), far more than those with an academic risk alone.

Our study also indicated that early prevention and intervention efforts are critical. As students accumulate risk factors, they become more likely to drop out, and possible intervention efforts become more limited. The dropout rate for students with one risk is 17.1%, for two risks it is 32.5% (90.1% increase), and for three risks it is 47.7% (178.9% increase). Considering that many students (1,395 youths) who dropped out exhibited multiple risk factors, early prevention and intervention efforts when students display no or one risk factor for dropout are highly recommended.

As the number of risk factors increases, not only do the dropout rates rise dramatically, but the number of significant predictors decreases. This decrease may limit prevention methods. Students who exhibited two or fewer risk factors had 8 to 11 significant predictive indicators, but only four predictors were significant among those students with all three risk factors. Therefore, the fewer risk factors the students have, the more likely it is that multiple predictors will influence their decision to drop out of school. Multiple intervention methods may be needed to help these students stay in school.

Additionally, this study implies that interventions are more effective when students display fewer risk factors. This can be seen in the odds ratio, Exp(B), where the odds of a unit or one-standard-deviation change in a predictor variable are large when the number of risks is small. For example, a one-standard-deviation increase in the enrichment index decreases the likelihood of dropping out of school by 43.9% in the 0 Risk model, 26.2% in the 2 Risks model, and 14.5% in the 3 Risks model.

Finally, although the three risk factors have a major impact on dropout (17.0%, 32.5%, and 47.7% dropout rate for one risk, two risks, and three risks, respectively), some students dropped out even when they displayed none of these risk factors. The current study found that the dropout rate for students who exhibited no risk factors but still dropped out is 4.3%, and eight predictive indicators impacted the decision of these students (see Table 2). Developing school-wide dropout prevention programs around these indicators would reach students who display no risk factors, reducing their likelihood of dropping out. By being sensitive to the impact of these indicators on students' lives and creating programs to aid students in effectively dealing with them, school counselors could contribute to decreasing the dropout rate.

The findings of this study could be useful when school counselors develop dropout prevention programs targeted to one at-risk group or another. The predictors targeted by these intervention programs should differ depending on the students' risk factors, as different predictors affect each group of students differently. For example, for the group of students with only academic risk, counselors may want to work around the following four topics: (a) examining and developing plans for the coming year (expectations to stay in school); (b) identifying factors interfering with attendance and generating strategies to improve attendance (absenteeism); (c) exploring the impact of peers on students' aspiration for higher education (percentage of peers going to college); and (d) understanding the physical, social, and psychological development of students and increasing a sense of respect for their own body (age of first sexual experience). Among these four predictors, absenteeism and peer relations appeared to have a higher impact on dropout than the other two indicators; therefore, programs with limited time or resources may find more success by focusing on these two indicators.

We found the three risk factors of academic failure, low socioeconomic status, and behavioral problems to have a major impact on the decision to drop out of school.

Likewise, for the group of students with low SES, this study identified five significant risk factors: (a) students' expectations to stay in school, (b) age of first sexual experience, (c) limited educational enrichment activities and resources, (d) risk of harm from the students' physical environment, and (e) household size. While students' expectations to stay in school and age of first sexual experience also were predictors in the academic risk group, the other three are unique to this group. Therefore, counselors need to help the students explore and identify negative impacts of their limited resources and disadvantaged environments on their academic achievement and develop strategic plans to raise their resilience against these difficult situations. Specifically, because physical environment and household size are the two most significant predicting factors, prevention programs should emphasize the nature of their impact on students' academic achievement and strategies to counteract that.

The third type of at-risk group, students with behavioral problems, including suspension from school, has nine factors influencing the decision to drop out, more than the other two groups. Five are shared with other groups, while the remaining four are unique to the behavioral group. The five shared factors are (a) students' expectations to stay in school, (b) absenteeism, (c) association with college-bound peers, (d) limited educational enrichment resources, and (e) unhealthy community and family

environment. The four factors unique to this group are (a) the possible impact of living with a nonbiological parent, (b) the effects of living in a metropolitan area, (c) participation in fights at school, and (d) whether the student had been threatened with harm at school.

In the behavioral group, many of these indicators reflect the special difficulties associated with living in a metropolitan area. Therefore, prevention efforts directed to students with behavioral problems in metropolitan areas need to address specifically how living in those areas can affect students' decisions to drop out. Residence in a metropolitan area is the largest risk indicator for students with behavioral troubles, but programs also should address these students' peer relationships, the possible emotional impact caused by living with a nonbiological parent, and the educational climate of their living environment.

In order to identify students who display a risk factor, school counselors need to actively involve teachers and parents in collaboration and consultation activities.

Finally, this research identified that a student's expectation to attend school the next year is the only significant predictor in all four risk models. Other predictors are only partially significant depending on the risk source. This implies that a student's expectation to be in school the next year is the most reliable predictor regardless of the risk type. This finding confirms the existing literature (Finn, 1989; Rumberger, 1987; Trusty, 1996; Trusty & Dooley-Dickey, 1993) that underscores the major role of student engagement with the school on eventual school completion. This indicates that school-wide dropout prevention and intervention efforts should address students' educational aspirations and plans for the coming years. This might further imply that career exploration and counseling should be given a priority in the secondary school counseling program development. Students' educational expectations have a critical impact on their decision to either continue or suspend their education in high school whether or not they display at-risk status by experiencing risk factors (academic difficulty, low SES, or behavior problems). Therefore, by developing programs to help students develop optimistic outlooks of their educational development, school counselors could prevent students from dropping out of school.

Limitations

It is important to note that the adolescents in this study were 12 to 16 years old as of 1996 and, thus, may not fully reflect the behavior of current high school students. Risk factors considered in this study are limited to the three major at-risk factors. Further research is clearly needed in order to better understand individual, home, and school influences of factors beyond the three risk factors identified in this investigation.

Conclusion

The American School Counselor Association (2005) recommends that each school or district develop a school counseling program aligned with the school or district's academic goals. In schools or districts where dropout is an increasingly troublesome problem and where raising the graduation rate becomes a critical goal, it is recommended that school counselors examine the characteristics of at-risk dropout students in their schools, keeping in mind the findings of this study. This investigation will help school counselors tailor their efforts to the unique needs of their student population.

Three differences were found between the existing literature and the findings in this study. First, this study attempted to develop the concept that early intervention should be based upon the number of risk factors that students display rather than using age- or grade-based reference. Early intervention implies early school age or a lower grade level of the student in most existing dropout literature (Fasko & Fasco, 1998; Lehr, Hansen, Sinclair, & Christenson, 2003; O'Connor, 1985; Rush & Vitale, 1994). Waiting until high school to address the dropout issue may be too late for most students. However, redefining early intervention as intervention when students display one of the three risk factors of low GPA, low SES, or behavioral problems can be useful at any level of school. By identifying students when they develop one or two risk factors, regardless of their school level or age, prevention programs can possibly effectively lower dropout rates. Additionally, we believe that possible prevention strategies should take into account that factors contributing to dropping out differ according to the risk each student displays.

In order to identify students who display a risk factor, school counselors need to actively involve teachers and parents in collaboration and consultation activities. It is also imperative that school counselors serve as advocates for students from low socioeconomic backgrounds and work closely with school authorities and community members to provide a better educational environment for this group of students. Students from a low socioeconomic background are more likely to drop out because of the lack of educational enrichment activities and resources, and the impact of their community environments on their lives. These findings urge school counselors to assist these students by helping them understand how their environment causes development of negative self-concepts and beliefs, therefore adversely impacting their schoolwork. At the same time, counselors may want to help these students develop resilience against these obstacles.

In summary, this study identified three major at-risk categories of students who drop out of school.

This study also found that students who drop out often have multiple risk factors influencing their decision. Because these risk factors are often firmly in place by high school and occur in conjunction with each other, this study supports the need for early intervention when younger students are more likely to display fewer risks. This study also identified the different predictors associated with each at-risk group. By knowing which predictors are more significant in each at-risk group, school counselors can better tailor dropout prevention programs to their students. ▮

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High Standards and High Graduation Rates:

Using Data-Driven Dropout Prevention Strategies Will Be Key to Ensuring that All Students Learn More and Stay in School

Introduction

In February of 2005, Achieve co-sponsored the National Education Summit on High Schools in order to focus the nation's attention on large number of students in America's high schools who either drop out before finishing or graduate unprepared for their next steps. Forty-five governors attended the Summit, along with corporate CEOs and K-12 and post-secondary leaders. Bill Gates and other prominent business leaders who attended painted a stark picture of the skills required to succeed in today's economy and the urgent need for high schools to better prepare students for those opportunities.

As a result of the Summit, 26 states joined with Achieve to form the American Diploma Project Network—a coalition of states committed to raising expectations in high school so that all students graduate ready for college and careers. As these states raise academic standards and graduation requirements, they also recognize the importance of intensifying their efforts to identify and support potential dropouts so that higher standards do not result in lower graduation rates. With the support of the Carnegie Corporation of New York, Achieve and Jobs for the Future are engaged in a project designed to demonstrate how states can accomplish this.

by Alissa Peltzman and Craig Jerald

Drop Out Prevention Gaining Momentum

Thirty years ago, most teenagers who dropped out of high school could expect to find a good paying job, and those who worked hard could expect to climb the economic ladder. But the world has changed. Today, high school dropouts face diminishing opportunities and a lifetime of financial struggle.

Dropouts are more likely to be unemployed, receive public assistance, commit crimes, and become incarcerated. At the same time, they are less likely to receive job-based health insurance, be given pension plans, vote, and make other kinds of civic contributions.[1] Keeping all students in high school and graduating more young people with better skills would save millions of taxpayer dollars, greatly expand tax revenues, reduce crime, and improve citizenship.

Therefore, Achieve has joined other organizations calling for "dual goals" to guide high school improvement efforts. Policymakers must find ways to raise graduation rates even as they simultaneously work to raise academic standards and better equip graduates for the demands of higher education and well-paying jobs.

Fortunately, many state and local policymakers are getting that message loud and clear, particularly following a slew of recent reports and newspaper articles calling attention to low graduation rates in many communities. Across the nation, leaders are considering a range of policies, reforms, and intervention programs designed to keep students in school and on track to earn a diploma.

But there is also a danger to that enthusiasm. If policymakers do not heed the lessons of previous dropout prevention efforts—along with some very important findings from recent research—their investments could result in millions of misspent dollars with very little payoff. The key to raising graduation rates lies not just in identifying the best intervention strategies, but also in building powerful data systems that target the right services to the right students in the right schools at the right time. The good news is that we know much more about how to do that than ever before.

Sobering Lessons from Previous Efforts

Although the dropout problem has received little attention in the past, the current focus on raising graduation rates is far from unprecedented. In fact, following publication of *A Nation at Risk* in 1983, a number of major counter-reports lamented lack of attention to graduation rates on the part of the burgeoning "educational excellence" movement. Foundation officials and others worried that raising graduation standards would help the college-bound, but leave other high school students stranded in the "rising tide of mediocrity."[2]

States and districts responded. "By the late 1980s, virtually every major school system had grappled with the issue of high school dropouts—on the one hand, by trying to identify the extent of the problem in their communities, and, on the other hand, by committing resources to address the problem," researcher Melissa Roderick observed in 1993.[3] The federal government pitched in by contributing $214 million between 1988 and 1994 for a School Dropout Demonstration Assistance Program.[4]

Unfortunately, those efforts did not yield very impressive results. Most of the programs did little to reduce dropping out. Nationally, graduation rates remained stagnant during the 1990s.

To be sure, those disappointing results were partly due to ineffective interventions that states and districts targeted to "at risk" students. But an evaluation of federally funded dropout prevention programs by Mathematica Policy Research, Inc., revealed another, equally important, reason: The programs often targeted the wrong students.

Mathematica researchers Philip Gleason and Mark Dynarski examined the student characteristics, or "risk factors," used by such programs to identify teenagers in need of help. They found that no commonly used risk factor yielded an actual dropout rate above 28 percent. That is, the most powerful risk factor was not very predictive: Over 70 percent of students with that risk factor would have graduated anyway.

In fact, Gleason and Dynarski concluded that programs that use combinations of risk factors tend to "serve more students who do not need dropout prevention services than students who do need them." No matter how effective it might be, a poorly targeted intervention program represents a massive missed opportunity—resulting both in lost dollars and in lost students.

Promising Findings from Recent Research

Recently, researchers have begun to examine longitudinal data, information collected and accumulated over time, to follow individual students as they progress from grade to grade as members of a "cohort," or group of students who start out in the same grade at the same time. Such data makes it possible to observe what happens to students who develop risk factors *at any point* along the way,

and thereby to paint a more detailed, nuanced portrait of the patterns and pathways students tend to follow as they move through the educational pipeline. Those patterns, in turn, allow districts to identify risk factors that are much better predictors of dropping out, offering a solid foundation for creating "early warning" data systems that can be used to better target interventions toward students who need them the most.

For example, analyzing cohorts of students moving through the Fall River, Massachusetts, school system, researcher Melissa Roderick identified several distinct clusters of dropouts, members of which followed highly distinctive patterns on the way to leaving school without a diploma. One group of "early dropouts," who left school before the 10th grade, exhibited telltale-warning signs as early as 4th grade. Another group, whose members dropped out during or after 10th grade, showed no risk factors in elementary school, but did exhibit very clear warning signs when they transitioned to middle school or to high school, including big declines in classroom grades and attendance.

Roderick contends that her study "challenges the assumption that dropping out is largely an individualized phenomenon [with] 'many different routes.'" She observes that if "the path to dropping out could be best characterized as one that is different for every youth, we would not have observed any clear patterns at all in trends in late grade dropouts' school performance."[6]

Similar studies in Philadelphia and Chicago have confirmed those basic findings. For example, last year Robert Balfanz and Lisa Herzog reported that they can accurately identify 50 percent of all eventual Philadelphia dropouts *as early as 6th grade*. Sixth-graders who exhibit low attendance (80 percent or lower), a failing mark for classroom behavior, a failing grade in math, or a failing grade in English have only a 10 percent chance of graduating on time and only a 20 percent chance of graduating a year behind schedule. Such students also are far more likely to perform poorly on state assessments, become overage during middle school, and fail 9th grade—"often for several years."[7]

By combining two characteristics they had observed to be strongly correlated with graduation, researchers working with the Consortium on Chicago School Research at the University of Chicago have developed an "on-track indicator" that signals when 9th graders are falling seriously off the track to earning a diploma. A student is considered on-track at the end of 9th grade if he or she has accumulated enough course credits to earn promotion to 10th grade while receiving no more than one F (based on semester marks) in core academic subjects.[8]

The on-track indicator has turned out to be a stunningly good predictor of whether students will graduate. Among entering 9th graders in 1999, the four-year graduation rate for on-track freshmen was 81 percent, compared with only 22 percent for those who fell off track during their freshmen year. In other words, the on-track indicator was 85 percent successful in predicting which members of the freshmen class would not graduate on time. And the indicator is nearly as successful at predicting which 9th graders will fail to graduate even if given an extra year to complete high school.[9]

Data-Driven Dropout Prevention

The good news is that such "cohort studies" are neither excessively difficult nor prohibitively expensive to conduct. That means states and districts can carry out their own analyses to identify precisely what kinds of highly predictive risk factors their own students exhibit, and exactly when they exhibit such factors, prior to dropping out. And they can easily conduct such studies *before* investing in expensive reforms and intervention strategies.

Many education officials have the mistaken impression that conducting a longitudinal cohort study will require first developing a sophisticated student tracking system, after which they will have to wait for six or seven years as the system follows a cohort of students through the pipeline. Fortunately, that is not the case. The methods used by researchers in places like Fall River, Massachusetts and Philadelphia, Pennsylvania reveal a much quicker, cheaper alternative. Those researchers collected existing information on previous cohorts whose students had already moved through the school system by engaging in a kind of "paper chase"—pulling data from the student records that every school district maintains in paper files or electronic databases.

Similarly, states and districts can save time and money by examining data on past cohorts to identify good predictors of what will happen to students in future cohorts. For example, a school system that wanted to begin building a cohort dataset in order to conduct analyses next fall would obtain information on the group of students who began as 6th graders during 1998-1999. Those students should have graduated from high school in 2004-5. Data from 2005-6 will provide information on any of students who took an additional year to graduate.

Table 1. *Top-Priority Student-Level Data Elements to Obtain for Phase I Analysis*

	Social Background	Academic Performance	Educational Engagement
Middle School	1. SES—FRPL eligibility, family income, etc. 2. Race/ethnicity 3. Gender 4. Mobility—number of schools enrolled 5. Years overage for grade	1. Grades in academic subjects including at least English and math by end of quarter, semester, and year 2. Failing grades in math and English 3. Scores on standardized assessments in at least reading and math, including grade-level and benchmark assessments 4. Number of times retained in grade during elementary and middle school	1. Attendance—number of days or percentage of days absent 2. Discipline problems—indicators of poor behavior, including, for example: a) Classroom behavior marks; b) Number of office referrals; c) Number of counseling referrals; and d) Number of suspensions. 3. Grades in non-academic subjects such as art, music, and phys ed, aggregated into one score (Roderick, 1993)
High School	1. SES—FRPL eligibility, family income, etc. 2. Race/ethnicity 3. Gender 4. Mobility—number of schools enrolled 5. Years overage for grade	1. Grades in core academic subjects, by end of quarter, semester, and year 2. Number of courses failed and passed in core courses, by end of quarter, semester, and year 3. Number of credits attempted by semester, by year, and cumulatively 4. Number of credits earned by semester, by year, and cumulatively 5. GPA by semester, by year, and cumulatively 6. 9th grade "on track indicator" equivalent to or adapted from measure developed by Consortium on Chicago School Reform: a) Earned enough credits to be promoted; and b) Received not more than one semester F in core academic subject, with same calculated for subsequent grade levels. 7. On-time promotion to 10th grade 8. Scores on standardized assessments, including grade-level, end-of-course, benchmark assessments, and exit exams 9. Dropped out previously and re-enrolled	1. Attendance—number of days or percentage of days absent 2. Discipline problems—indicators of poor behavior, including, for example: a) Number of office referrals; b) Number of counseling referrals; and c) Number of suspensions.

NOTE: *The numbering of data elements in this table is not meant to imply rank ordering on the basis of priority. All elements in this table are high-priority. The relative predictive power of any element will vary by location.*

To be sure, any such up-front research to enable data-driven decision making does require an investment of time and money. But the benefits are likely to far outweigh the costs. Consider the following hypothetical example based on the Consortium on Chicago School Research's "on-track indicator":

Assume that the Chicago Public Schools decided to provide targeted assistance to all off-track students at the end of 9th grade. Further assume that 30,000 freshmen enter Chicago high schools each year and about 58 percent of them fall off track, which means the program would provide interventions to 17,370 students. The risk factor would fail to identify 2,400 "false negatives," students who, despite being on track at the end of 9th grade, would eventually fail to graduate. Those students would not receive the help they need.

Conversely, the indicator would identify 3,821 "false positives," off-track students who would have recovered and graduated anyway. Assume that the intervention program costs an average of $350 per student. That would make the total cost of the program $6,079,500, of which $1,337,490 (or 22 percent) would have been spent on false positives—students who did not need the extra help, because they would have graduated even without it.

However, because the risk factor is very good at identifying students who are truly at risk, *even if the intervention program is only halfway effective* (i.e., if it achieves only a 50 percent success rate for getting off-track students back on track to graduate), the Chicago Public Schools would:

- Reduce the number of dropouts from 15,948 to 9,174 (a 42 percent reduction) while increasing the number of graduates from 14,052 to 20,826 (a 48 percent increase); and
- Raise the district's on-time graduation rate from 47 percent to 69 percent (i.e., to about the national average).[10]

Still, some policymakers might wonder whether it wouldn't be cheaper and easier to simply use the patterns and risk factors identified by the Chicago, Philadelphia, and Fall River studies rather than examining their own data. That is certainly one option. However, those studies were all conducted in high-poverty urban districts in the Northeast and Midwest, and it is not yet clear whether the same exact patterns are observable in suburban and rural districts.

Moreover, those same studies have taught us that making even common sense assumptions about risk factors can be dangerous. For example, one might assume that standardized test scores would reveal as much or even more about risk for dropping out as classroom grades. Conveniently, standardized test scores are often easier to obtain since they are more often centrally maintained. However, Balfanz and Herzog found just the opposite: Classroom grades are much better than standardized test scores at predicting which Philadelphia 6th graders will drop out.

Such surprising, counterintuitive findings reveal why it might be important to begin by examining a large pool of potential indicators. Indeed, the Philadelphia team conducted a preliminary screen of about 20 student characteristics in order to obtain a final list of only four "high-yield" risk factors (see Table 1 on page 10 for a list of "priority" indicators to examine based on recent cohort studies and Achieve's extensive review of dropout research).

Finally, the Chicago research revealed an additional incentive for states or districts to gather data and conduct their own analyses prior to implementing dropout reduction reforms or intervention programs. Last year, Consortium researchers demonstrated that Chicago's high schools vary enormously both in the proportion of 9th graders who stay on-track and in their graduation rates—even *after* taking into account a host of individual risk factors that students "carry with them" into high school, including race, poverty, gender, prior academic achievement, and being overage for a grade.[11]

That means states and districts can identify not only the high schools where student risk factors are most heavily *concentrated*, but also those schools that *contribute* the most to dropping out by compounding the risk factors that students bring with them. And that will help them better target more comprehensive grade-level programs and school wide reforms to complement interventions that serve individual students.

Of course, taking a data-driven approach to dropout prevention does not mean starting entirely from scratch or working entirely alone. The existing research base provides a very solid foundation to build on. And there is no reason to suspect that groups of geographically and demographically similar districts cannot collaborate on research and development, share findings, and borrow from one another.

Opportunities for State Boards of Education

As states pursue the policy goals of the American Diploma Project—for all students to graduate—it will be critical to identify and support the academic needs of all students. There are three

policy actions that state boards of education can support in order to move this piece of the agenda forward.

- *Build High Quality Data Systems:* While it seems that schools are currently inundated with data, it is critical that states and schools have access to the most relevant data, as well as the ability to track student-level data over time, from pre-kindergarten through 12th grade and into higher education. (For more information, see the article on Longitudinal Data Systems and the Data Quality Campaign on page 26 of this issue.)

  As states work towards preparing all students, an accurate measure of high school graduation and dropout rates is essential. The National Governors Association convened a task force after the 2005 Summit to identify a reliable and consistent measure of the graduation and dropout rate. The result was a compact signed by all 50 governors to develop a standard, four-year, adjusted-cohort graduation rate. Since then there has been an upsurge in support for this measure; however, it has not translated into action in all states. States should be urged to implement and utilize this measure for data and accountability purposes.

- *Provide Incentives for Local Districts to Create an Early Warning Data System and Conduct Cohort Analyses:* Demonstrate leadership and offer incentives to inspire districts to become more data-driven in their dropout prevention efforts. Even though most decisions about what kinds of interventions to provide to which students will be made at the local level, states can use their influence to encourage districts to make such decisions based on solid data and sound judgment. States also can provide a range of additional resources to help districts conduct cohort analyses—from start-up funding to technical expertise. And states can broker collaborative arrangements among geographically and demographically similar districts that wish to save time and money by pooling their research and development efforts to identify and employ better risk factors.

- *Create a System of Intensive and Sustained Student Supports:* While the early warning system identifies common patterns and crisis spots in the pipeline that lead to students dropping out, students who drop out are not a monolithic group. Therefore, the solutions and strategies to curbing the problem and raising academic achievement for all students will require an array of solutions and strategies. Once armed with data from the cohort analyses, districts and schools need to have the resources to respond to the different student populations identified. Prevention, intervention, and recovery programs need to be implemented and supported.

For some students or groups of students, a key approach will be providing remediation and acceleration simultaneously. For example, if many students exhibit risk factors related to low academic performance policymakers might decide to provide accelerated instruction to such students in the form of "catch-up courses." For others, there should be a more engaging and accessible pathway that uses academically rigorous career and technical education programs. Students who exhibit warning signs related to educational engagement—for example, very low attendance or very poor behavior—might require one-on-one counseling. Schools can target students for counseling based on data from the Early Warning System. However, if high proportions of students exhibit such warning signs in some schools, the district might consider school wide interventions instead or in addition to one-on-one counseling.[12]

Providing interventions to students who develop risk factors can help improve graduation rates. But district leaders can also intervene on a school wide level to create conditions that help prevent students from developing risk factors in the first place, and that reduce the negative impact of some schools on graduation rates. For example, are there middle schools and high schools where transition years are especially difficult for students? Do students who enter such schools exhibit big declines in academic performance, educational engagement, or both? If academic performance is the main problem, school or district leaders might consider curriculum changes, professional development, or carving out more time for math and literacy. If it is educational engagement, leaders might consider restructuring those grade levels into small learning communities, instituting adult advocate or mentor programs, or restructuring schedules to allow teachers more time to interact in supportive ways with individual students.

In large urban districts where risk factors are pervasive and more than half of the student population drops out, individual interventions and even aggressive institutional reforms might not be enough to adequately address the problem. Such systems might need to invest in large-scale, system-wide

strategies. Another option is to create multiple institutional and non-institutional pathways to obtaining a diploma or a portfolio of flexible second-chance options for students who already have dropped out.

Conclusion

Because of the rapidly changing American economy and a new commitment on the part of state leaders to raise graduation standards, solving the dropout problem has become more important than ever before.

If policymakers heed the most current research, avoid the mistakes of the past, and invest dollars in sufficient, up-front "research and development," they can build data systems to identify many of those students on the path to dropping out early enough to make a difference.

Achieve, Inc. and Jobs for the Future are working together to help selected states address the dual goals of raising graduation rates while simultaneously raising academic standards. The project is designed to significantly raise awareness of the importance of this dual agenda and demonstrate how a more strategic and intentional use of high school reform strategies and policies can help states improve outcomes for all of their students. ■

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[1]Papers presented at Campaign for Fiscal Equity Fall 2005 Symposium on the "Social Costs of Inadequate Education." (2005, October 24-25). New York: Teachers College, Columbia University. Available at https://www.tc.columbia.edu/centers/EquityCampaign/symposium/symposium.asp.

[2]Roderick, M., *The path to dropping out: Evidence for Intervention* (Westport, CT: Auburn House, 1993; p. 9-10).

[3]Ibid, (p. 14).

[4]Papers presented at Campaign for Fiscal Equity Fall 2005 Symposium on the "Social Costs of Inadequate Education." (2005, October 24-25). New York: Teachers College, Columbia University. Available at https://www.tc.columbia.edu/centers/EquityCampaign/symposium/symposium.asp.

[5]Gleason, P. & Dynarski, M., "Do We Know Whom to Serve? Issues in Using Risk Factors to Identify Dropouts" *Journal of Education for Students Placed at Risk*, volume 7 (Louisville, KY: University of Louisville, 2002; p. 37).

[6]Roderick, M., *The path to dropping out: Evidence for Intervention* (Westport, CT: Auburn House, 1993; p. 82).

[7]Balfanz, R. & Herzog, L., *Keeping Middle Grades Students on Track to Graduation: Initial Analysis and Implications.* Presentation given at the second Regional Middle Grades Symposium (Philadelphia, PA: Auburn House, 2005; p. 9-10).

[8]Allensworth, E. & Easton, J.Q., *The On-track Indicator as a Predictor of High School Graduation* (Chicago, IL: Consortium on Chicago School Research, 2005; p. 3).

[9]Ibid, (p. 7).

[10]For comparison, if the intervention turned out to be 100 percent effective, it would decrease the dropout rate from 53 percent to 8 percent and increase the graduation rate from 47 percent to 92 percent. No *single* intervention ever proves that effective, however.

[11]Allensworth, E. & Easton, J.Q., *The On-track Indicator as a Predictor of High School Graduation* (Chicago, IL: Consortium on Chicago School Research, 2005; p. 5-6).

[12]For example, the Check & Connect program has achieved high rates of success curbing truancy and disengagement among at-risk elementary and secondary school students. See Lehr, C.A., Sinclair, M.F., & Christenson, S.L. (2004). Addressing student engagement and truancy prevention during the elementary school years: A replication study of the Check & Connect model. *Journal of Education for Students Placed at Risk, 9(3), 279-301.*

Created by the nation's governors and business leaders, Achieve, Inc. is a bipartisan, nonprofit organization that helps states raise academic standards, improve assessments and strengthen accountability to prepare all young people for post-secondary education, work and citizenship. A white paper exploring this topic in much greater detail can be downloaded from www.achieve.org/files/FINAL-dropouts.pdf.

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Urban CEO Superintendents' Alternative Strategies in Reducing School Dropouts

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The focus is on strategies used by 10 urban districts to reduce school dropouts. Thirty-eight strategies for dropout prevention were identified. Although the majority identified dropout prevention strategies, only two districts referred to "recovery programs." If district spokespersons mentioned their CEOs using a systems approach in reducing dropouts, the program plans were more specific and recovery programs more active. A surprise was the silence about instructional initiatives for early grade intervention and dropout prevention. The most common prevention strategy was punitive measures involving the criminal justice system, that is, police departments, district attorneys. Thus, it is not surprising that the dropout rate in several of these cities remains unabated during the past 5 years.

Keywords: *dropout prevention strategies; urban CEOs and systems leadership; urban schools*

Will the high school graduation rate increase to 90% by 2010? We are already 5 years behind schedule. Urban school CEOs are looking for ways to reduce the number of America's youth who drop out of school and fail to achieve the American dream. CEOs are searching for alternative curricula and funding for programs to meet the educational, social, and personal needs of adolescents who have lost hope in earning a high school diploma. Green (2001) reported that "the problem of low graduation rates is really an urban problem" (p. 4). He analyzed 50 of the largest districts in America and found that Cleveland, Ohio, had the lowest overall high school graduation rate, and the highest graduation rate was 87% in Fairfax County, Virginia. As a result of these alarming statistics, beleaguered urban school executives are

turning to systems leadership strategies to engage community, state, and national agencies; foundations; and government in sharing the struggle of keeping our youth in school and ensuring higher percentages of high school graduates (Björk & Lindle, 2001; Glass, Björk, & Brunner, 2000; Hoyle, Björk, Collier, & Glass, 2005; Jenlink, 2001; McCarthy, 2002). Urban CEOs are finding that urban social and economic conditions, stiffer course requirements for graduation, and the growth of "high-stakes" exams have increased the retention of students in the ninth grade that portends greater numbers of high school dropouts.

To assist in addressing the problem, this article strives to deepen the search for solutions to the growing dropout problem in urban school districts and investigate current strategies. We review student dropout statistics: who drops out of school, the devastating costs of dropouts to America's economy, and the toll on human lives. Next, a framework of research examines the complexities of why students drop out, followed by the research procedures including the 10 questions directed to district dropout administrators. Then, we present the findings including a table matching the 15 alternative strategies by the National Dropout Prevention Center with the strategies under way in the 10 selected districts. We close the article with conclusions and recommendations based on insights gleaned from the inquiry.

Who Drops Out

Despite efforts to increase high school completion in the United States, each year approximately 5% of all high school students drop out of school (Kaufman, Kwon, Klein, & Chapman, 1999). According to the Children's Defense Fund, one high school student drops out every 9 secs, and students most likely to drop out are disabled, Hispanic, African American, Native American, or from low-income families (National Center for Educational Statistics, 2002). If these students live in urban areas and come from single-parent homes, their chances for completing high school remain at 50% (Fry, 2003). Russell Rumberger (2001) reported that in the 1997-1998 school year, 479,000 students dropped out of high school, and Rumberger and Lamb (1998) reported that 21% of students who were eighth graders in 1988 dropped out before Grade 12. Duffrin (2003) warned, moreover, that students who fall behind in credits during the ninth grade, creating the "bulge," are 5 times more likely to drop out than students who advance to the 10th grade and fail no more than one course. In addition, Mark Goldberg (2005) reminded us, "If a student is held back twice by grade nine, he or she

may reach the age at which dropping out of school does not require parental permission" (p. 392).

In a landmark study, Green (2001) reported that fewer than 50% of urban African Americans and Latinos/Latinas graduated from the 45 urban districts where there were sufficient data to analyze. Thus, African Americans and Hispanics are more likely than non-Hispanics to drop out of school (U.S. Census Bureau, 2002). However, Vaishali Honawar (2004) cautioned dropout researchers about the elusive nature of counting dropout numbers of Hispanic youth this way: "Nearly 9 percent of Hispanics in grades 10 though 12 in the 2000-2001 academic year dropped out before the end of the year" (p. 6). These figures are subject to error because large numbers of Hispanics are immigrants who never attended school in the United States. For example, in 2001, 43.4% of the Hispanics age 16 to 24 years who were born outside the United States were high school dropouts. Hispanics born in the United States were much less likely to drop out (Honawar, 2004).

Some observers reasoned that the decline in dropouts is a result of youth choosing an alternative route by taking the GED. Rumsberger (2001) observed that "10 percent of all young people completed high school through an alternative means in 1998 compared to 4 percent in 1988" (p. 1). The General Equivalency Diploma (GED) alternative is one answer to why the proportion of students completing high school appears to remain steady whereas the proportion earning high school diplomas has actually declined.

Some researchers doubt the accuracy of the U.S. Department of Education dropout analyses based on household surveys and rely on the U.S. Census Bureau data (Fry, 2003). The Census Bureau (2002) reports the status dropout rate (the percentage of an age group that is not enrolled and has not earned a high school credential; i.e., diploma or equivalent, such as a GED) has declined in all major racial and/or ethnic groups. During the 1990s, the Hispanic dropout rate fell from 21.8% in 1990 to 21.1% in 2000. Thus, although various databases about who drops out are becoming more accessible, it is challenging for researchers, CEOs, and other policy makers to interpret the data.

Counting Dropouts

Confusion remains about various methods state education departments and school districts use to estimate dropout rates. These methods range from estimated percentages of students making the transition from Grade 11 to Grade 12, to comparing numbers of students who enter Grade 9 and graduate 3 years later. In addition, the definitions of the terms *dropout rates*, *dropout percentages*, and *dropout numbers* add to the confusion.

One best effort to bring clarity to the dropout count is Gregory Wood's (2001) definitive work that classified dropouts into four categories: event, status, cohort, and high school completion rates. *Event rate* is the number of students who drop out each year compared to previous years; *status rate* is higher than event rate because it calculates the proportion of all individuals in the population who have not finished high school and are not enrolled at a given point in time; *cohort rate* is the number of dropouts from a single age group or grade during a period of time; and the *high school completion rate* indicates the percentage of all persons age 21 and 22 years who have earned a high school diploma or equivalency certificate (L. Wood, 1994). In spite of Wood's classification of dropouts, the numbers remain elusive and inaccurate because of confusing state department policies, reporting rules, inconsistent data gathering, and interpretation procedures.

Another notable method for calculating graduation rates was designed by Green (2001). He identified the eighth-grade enrollment for each subgroup (White, African American, and Latino/Latina) for the fall of 1993 and followed the students to determine how many high school diplomas were awarded in the spring of 1998, when those eighth graders should have graduated. His formula is the following: "Graduation rate = regular diplomas from 1998/adjusted eighth-grade enrollment from 1993" (p. 1).

Perhaps confusion over the preferred methods of reporting dropouts has caused unintended or intended unethical behaviors. Christopher Brauchi (2003) described the errors found in the Houston, Texas, Independent School District in the 2001-2002 school year. The district reported that only 1.5% of its students dropped out of school, making Houston a model for other urban districts. Reporting procedures became suspect when a Houston high school assistant principal asked his principal why the school reported 100% attendance and no dropouts after he discovered that school enrollment went from 1,000 freshmen to fewer than 300 seniors 3 years later. In spite of this revelation, according to Brauchi, "The school continued to claim no dropouts and the principal stood her ground" (p. 1). The "whistle-blowing" assistant principal was assigned to another position.

Increased pressures on urban school administrators from the CEO superintendent on down to the campus attendance clerk is not surprising because bonuses are awarded for improved student attendance and higher test scores. To reduce these pressures from superiors, some administrators may report distorted numbers to avoid reprimand or searching for another job. In sum, counting methods and reporting remains problematic in framing the total picture of who actually drops out. These loosely coupled data management and reporting problems reflect gaps in the knowledge base of system administrators in determining who actually drops out of their school districts.

The High Costs of Dropouts

District CEOs are charged to be cost-effective with every tax dollar. For every school dropout, the district loses financial and human capital. Because state and local school funding formulas rely on student attendance, every dropout has a negative impact on resources to meet student needs. Even though Hanushek (1989) and Hedges, Laine, and Greenwald (1994) found little empirical evidence that more money automatically produces higher student achievement, they believe that better resources promote better teaching, smaller classes, and more communal schools (Rumberger & Thomas, 2000). Other scholars suggest that the amount of school resources influences school dropout and faculty turnover rates. Not only do schools struggle to provide equitable funding for all students but also students who drop out become economic burdens for state and federal governments. Dropouts cost the United States an estimated U.S. $260 billion annually in lost earnings, taxes, and social services (U.S. Department of Labor, 2000). Incarceration rates and school dropouts have a high positive correlation because more than one half of Americas' federal prison inmates are high school dropouts (Kirsch, Jungeblut, Jenkins, & Kolstad, 1998). A 1% increase in high school graduation rates would save approximately $1.4 billion in incarceration costs, or about $2,100 per each male high school graduate (CompuServe, 2004). Between the 1985-1986 and 2003-2004 school years more than 2 million students, largely from urban districts, have dropped out and cost the state of Texas more than $500 billion in income, lost tax revenues, welfare, unemployment, and criminal justice costs (Johnson, 2004). Thus, large numbers of urban dropouts remain an American social tragedy in terms of our nation's influence in a global economic market and in our social systems to support the health and educational needs of our citizenry.

Why Students Drop Out

It is now common knowledge that reasons surrounding the drop-out problem are inextricably linked to issues affecting our demographic, social, political, and economic way of life. Child abuse, poverty, family instability, unemployment, and discrimination are embedded in the reasons our youth quit school. In addition, greater press for accountability by state policy and the No Child Left Behind Act (NCLB) mandates ending social promotion and increasing the difficulty of high school exit exams could increase the number of dropouts (Heubert & Hauser, 1999). The NCLB Act requires that all groups of students be tested and required to meet the same standards.

Oregon classroom teacher Janene Thomas (2005) believed that a single score that determines future success for her diverse students will create more failures and increase the number of school dropouts. She questioned how scores on a single test can provide accurate information to help guide the achievement of the nation's "historically low-achieving groups, students in special education programs, those from impoverished homes, minority students, and English-language learners" (p. 385). She believed that a single high-stakes test is an inadequate measure for her diverse students who do not learn the "same thing in the same amount of time" (p. 385). Other observers find single high-stakes testing too narrow and unrelated to skills needed to become successful citizens and believe it will only increase the dropout rate in America (McNeil, 2000; Popham, 2003).

In spite of these concerns, however, the NCLB test-based accountability has gained support from legions of political, corporate, and higher education officials demanding "rigorous standards" and from advocates for poor children who have been neglected and allowed to fail in America's classrooms. Supporters of high-stakes testing believe that the tests promote alignment of the curriculum with the tests and consequently standardization of the curriculum and that they provide student performance data to help make informed decisions about each student (Fuller & Johnson, 2001; Lunenburg, 2002; Scheurich & Skrla, 2003; Skrla, Scheurich, & Johnson, 2001). However, teacher Janene Thomas (2005) and others argued that NCLB limits options for all students and should be replaced by more flexible child-centered curricula and instruction (Amrein & Berliner, 2002; McNeil, 2000; Rapp, 2002; Spring, 2002). These opponents to NCLB support preparing children and youth for life and instilling cultural appreciation, respect for social justice, and traditions that define an educated person. A "one best model" for all children and youth is viewed as mean spirited and unresponsive to individual needs and lacking respect for unique talents and ways of learning and knowing. When flexibility in teaching and testing is lost, students of poverty and English language deficits become public school casualties, and they join the ranks of the unemployed, turn to crime, become depressed, and live in poverty. Poverty, especially among minority youth from single-parent homes in urban centers, presents a pattern of violence, fear, and day-to-day survival. As a result, resource-poor schools are expected to solve these complex problems.

Although schools play a strategic role in social justice and students' keys to a better life, school leaders realize that they cannot solve the problems alone. Unless community agencies and state and national government build stronger links to turn the plight of urban and rural children in a positive direction,

America will fail to live up to its promise of opportunity for all. Dropouts, "pushouts," and burnouts are difficult to save in high school. They are saved in preschool through Grade 3 (Hess, Lyons, & Corsino, as cited in Ormrod, 1995; Hoyle, 1993). Few will argue that the National Education Goal 1 is not commendable; however, few believed at the time or now that "by the year 2000 all children in America will start to school ready to learn."

Research findings reveal the obvious link between high absenteeism and low test scores (McNeal, 1997; Rumberger, 1995; Temple & Reynolds, 1997). Fred Lunenburg's (2002) research on improving student achievement to prevent dropouts is a collaborative effort. He wrote,

> Sustained district wide improvement is not possible without a strong connection across levels of organization and each school is supported by a strong external infrastructure, stable political environments, and resources outside the school, including leadership from the superintendent and school board as well as leadership from the state. (p. 22)

Thus, the causes of dropouts and links to school effectiveness and community collaborations have been well documented. America, however, is 4 years behind in reaching the school completion Goal 2, "By the year 2000 the high school graduation rate will increase to at least 90 percent" (National Education Goals Panel, 1999). Because research clearly establishes that the greatest numbers of student dropouts are in urban centers, we have investigated dropout prevention strategies implemented in 10 urban districts.

Urban District Selection

We selected 10 of 30 urban districts suggested by American Association of School Administrator (AASA) with supporting data from *Education Week,* the AASA's *Daily Web News*, Intercultural Development Research Association, and other media sources for education information. We attempted to select the 10 districts based on their locations, similar demographics, and various strategies under way to keep students in school until they graduate. The 10 districts are the following:

- Colorado Springs, Colorado, District #11
- Dallas, Texas, Independent School District
- Los Angeles, California, Unified School District
- Miami-Dade County, Florida, Public Schools
- Oklahoma City, Oklahoma, Public Schools

- Sacramento, California, Unified School District
- San Antonio, Texas, Independent School District
- San Francisco, California, Unified School District
- Salt Lake City, Utah, Schools
- Tulsa, Oklahoma, Public Schools

In all 10 urban districts, the administrator delegated by the superintendent to be responsible for student accounting and who agreed to be interviewed by telephone and to provide district policies and drop out prevention documents was our contact person.

Research Procedures

The current study was focused on identifying dropout prevention strategies in selected urban school districts as reflected in the policies, strategies, and actions taken by CEO superintendents. As a result of the extensive literature about dropout statistics and the controversies in defining and calculating dropouts found above, we chose to focus on prevention strategies in use or in future plans. Eight questions were created to identify district similarities with the 15 strategies recommended by the National Dropout Center that have positive effects on the dropout rate in the United States. The eight questions are as follows:

What strategies are you using to keep kids in school?
Has your district changed its process of determining dropouts?
What community agency leaders are helping to keep kids in school?
What do you suggest as the best system to monitor student attendance?
Who is responsible for leading your dropout program?
At what level do your dropout interventions begin?
Do you have any indicators of past success in reducing dropouts?
On a scale of 1-10, where does dropout prevention and recovery of dropouts rate as a district goal?

After completing the interviews and document reviews, we aligned the information to the 15 National Dropout Prevention Center Strategies (see Table 1). Follow-up phone calls were made to the same or another administrator if clarification was necessary. We tried to allay fears of negative publicity by promising them a final document that should provide helpful strategies found in the other districts. Because of heightened scrutiny by the news media and state legislators about the dropout problem, we assured spokespersons in each district that the findings would highlight their efforts to increase graduation rates.

Table 1
Links to the 15 Strategies Recommended by the National Dropout Prevention Center

Recommended	Links to Strategies
1. Evidence of systemic renewal	Changing the system referenced
	Staff development implemented
	District-level personnel involved
	Staff designated for dropout programs
2. Evidence of professional development	Professional Learning Communities developed
	Students taught resiliency strategies
3. Early childhood education	Early childhood not referenced
4. Alternative schooling	Charter schools
	Digital schools
	Elective and mandatory alternative programs
	Hospital program
	Night school
	Summer school and/or institutes
5. Instructional technologies	Digital school
	Technology used in tracking attendance and general automatic parent notices
6. Service learning	None
7. Conflict resolution	Court action
	Mediation program offered by city agencies (police, etc.)
	Anger management and/or antiharassment programs
8. Out-of-school experiences	Work education programs
9. Community collaboratives	Support of civic clubs
	Support of private corporations
	Involvement with the legal system (police, district attorney, juvenile courts, county officials)
10. Family involvement	Efforts to build awareness regarding importance of attendance
11. Reading and writing programs	No reference to specific programs
12. Individualized instruction	Mentioned once in regard to digital schools
13. Mentoring/tutoring	Provided by private corporations, police, community organizations
	Mentoring by staff members
14. Learning style/multiple intelligence strategies	Not mentioned
15. Career education/workforce	Work education mentioned in one district

Findings

The ease with which information could be obtained seemed to be an indication of the importance of dropout strategies in a district. If a phone call to the superintendent's office resulted in the quick identification of a name for "the person responsible for dropouts in the district," the result was a conversation with an individual who seemed to focus on dropouts. If identifying the correct person to answer the questions required a callback or referrals from one person to another until individuals who saw themselves as being knowledgeable about dropouts were contacted, then the clarity with which the individual spoke was tempered. It was common for individuals in this latter category to reference other responsibilities they had in the district in addition to dropouts.

Individuals who were clearly focused on dropouts referred to the superintendent's interest in and/or support for dropout prevention and recovery strategies. The inclusion of dropout prevention and recovery was also mentioned as a board goal in the districts. This attention from the CEO and the board can be assumed to be the reason there was an individual responsible for dropouts in those districts.

Three districts referenced formal dropout prevention and recovery plans. Each district approached the development of their plan differently. Committees representative of diverse groups within and outside the districts were common. In Colorado Springs, the plan was developed by forming committees focused on the 15 strategies identified by the National Dropout Prevention Center. When a committee determined a strategy was not adequately addressed in the district, the committee developed plans for services to address the need. Without exception, however, the district spokesperson for each district, with or without a formal plan, indicated that he or she anticipated dropout initiatives would grow in importance in the next few years, partially because of NCLB. All of the district spokespersons indicated that their programs were works in progress and that they were seeking strategies that will assist them with their planning.

Strategies Identified

District spokespersons identified 38 strategies. The researchers grouped the strategies into six categories. The categories are (a) punishments and incentives, (b) personnel, (c) targeted programs, (d) alternative schools, (e) community involvement, and (f) instructional initiatives (see Table 2).

(text continues on p. 82)

Table 2
Categorized List of Strategies Named by District Spokespersons, December 2004

Strategy	Colorado Springs, CO	Dallas, TX	Los Angeles, CA, Unified	Miami Dade, FL	Oklahoma City, OK	Sacramento, CA	San Antonio, TX	San Francisco, CA	Salt Lake City, UT	Tulsa, OK
Punishment and incentives										
Access to higher education		X								
Attendance incentives			X				X			
Criminal courts and/or peer courts			X		X		X		X	X
Personnel										
Attendance monitoring	X			X				X		
Coordination of service teams			X							
Counseling for individuals and groups						X	X		X	
Dedicated district personnel			X			X			X	
On-campus student support personnel	X		X							
Social workers									X	
Parental involvement	X	X	X	X		X*				
Format district prevention plan	X	X		X						
Targeted programs										
After-school programs						X				
Anger management and/or antiharassment									X	
Elementary program			X					X	X	
Gang prevention								X	X	

(continued)

Table 2 (continued)

Strategy	Colorado Springs, CO	Dallas, TX	Los Angeles, CA, Unified	Miami Dade, FL	Oklahoma City, OK	Sacramento, CA	San Antonio, TX	San Francisco, CA	Salt Lake City, UT	Tulsa, OK
Substance abuse programs									X	
Transition support (primarily between middle school and high school)				X						
Reconnection centers		X								
Truancy							X		X	
Alternative schools										
Alternative schools (disciplinary)	X	X	X		X	X	X			
Alternative schools (elective)	X		X		X					
Charter schools	X									
Digital schools	X									
Hospital program and/or pregnancy					X				X	
Night schools	X								X	
Summer institutes	X									
Work education			X							
Community involvement										
Private companies and/or organizations		X	X				X			
Faith based						X	X			
Government agencies (including police)	X	X	X	X	X	X	X	X	X	

Nonprofit organizations	X			X					X		X			
Criminal justice system (also represented in government agencies)	X		X	X			X		X		X	X		X
Service organizations											X			
Instructional														
Mentoring	X		X				X							
Professional learning communities	X													
Resiliency strategies					X									
Staff development	X											X		

Punishments and Incentives

Out of the 38 strategies referenced in the current study, six districts referenced alternative schools that are a mixture of places designed to encourage and/or entice students to remain in school while other districts referenced disciplinary alternative schools including Texas mandatory disciplinary campuses. It should be noted that five districts referenced the criminal justice system in some way when discussing their dropout strategies. This is probably because compulsory attendance laws result in some level of involvement with the legal system. City and county courts were mentioned with the greatest frequency. In California, there appears to be a strong relationship between school districts and the district attorneys, as Los Angeles and San Francisco Unified Districts referenced their relationship with the city and district attorneys.

Peer courts were also mentioned as an extension of involvement with the legal system and sometimes funded and managed by a branch of the legal system. Even parental involvement was linked to the legal system. This involvement ranged from the district taking parents to court for violating compulsory attendance laws to the required parental meetings held by the attorney general's office in Los Angeles when students have excessive absences. Moreover, the researchers found frequent involvement of police departments often through the administration of federal grants through the justice department. The relationship with the legal system is even more evident in the listing of community resources referenced by district spokespersons as charted in Table 2.

Only two districts mentioned incentives; however, punishments such as those listed above were mentioned by eight districts. In addition, attendance incentives and parental involvement activities were the only two programs beginning in the primary grades and continuing through high school. Access to higher education was mentioned by only one district as a strategy used to provide students with an incentive for staying in school. The reader should be reminded, however, that this does not mean that incentive programs do not exist in many, or even all, of the districts. It does imply, however, that incentive programs are not a top priority in the overall strategies being used to address dropout problems.

Personnel

The creation of a new position at either the district or campus level appeared to be directly related to superintendent and board priority ratings of

addressing the dropout problem. Only two districts had identified an individual at the district level to coordinate and conduct programming on dropout reduction. For example, Tulsa Public Schools assign a campus person to monitor and report dropout statistics to the associate superintendent for instructional services. Counseling services for potential dropouts were mentioned by three districts, with the services being provided either by police departments, health department social workers, or school counselors. It is interesting to note, school counselors, because of a lack of time due to other duties, did not seem to focus on dropout prevention. In at least three districts the counselors referred students to social services or other county youth counseling agencies. Parental involvement was a frequently mentioned strategy especially at the elementary and middle school levels. At these levels, the focus was on attendance with various incentives being mentioned. At the secondary level, parental involvement was mentioned and was more likely to be less frequently linked to law enforcement and the courts. For instance, in Los Angeles Unified, excessive absences result in a parent being called to a meeting with the city attorney. In several instances, parents being fined for their child's excessive absences were mentioned.

Personnel were in place in each district to monitor dropout programs. In Los Angeles Unified, dropout prevention consultant positions were added with new grant funds. These consultants on campuses organize coordination services teams that include an administrator and other district and campus personnel and are expected to meet as frequently as needed. These teams focus on individual students and provide them mentors to guide them toward improved performance and attendance.

Targeted Programs

All districts mentioned at least one program targeted at a particular problem or need. Examples are an after-school program planned to provide students with academic support with tutors and with supervised activities until parents or guardians pick them up. Other programs focused on student behavioral or social problems. Such programs addressed anger management and/or antiharassment, gang prevention, substance abuse, and truancy. Several of these programs were being conducted in cooperation with state or private health agencies or local police departments. Addressing other student problems were programs for homebound and hospital services—services required by the federal government under Individual Development Education Act (IDEA).

Examples include the reconnection centers in Dallas that work to recover prior dropouts. In Miami-Dade, transition support for students moving into middle school and high school is a targeted strategy. Given the traditionally high attrition rate experienced in the ninth grade, transition strategies for students moving into high school can be presumed to be basic to dropout prevention in each of the 10 districts. Recovery programs were rarely mentioned; however, several spokespersons indicated that recovery programs would be strengthened to meet NCLB standards.

Alternative Schools

Alternative schools were mentioned in six of the districts as one of their first strategies to provide schools of choice. These schools took on varying forms and functions. One of the more innovative alternative schools was a digital school in a Colorado Springs shopping mall. The original intent was to recover dropouts; however, the school was in great demand by students wanting to earn credits to get back on track for graduation. This unexpected response caused the district to plan another mall location and to consider on-campus digital alternative schools on each high school campus.

The most familiar alternative school models were night schools, summer schools, and work education programs. Although not all districts mentioned these alternatives—and none mentioned them as one of their first strategies—this absence may be because these programs have been used for a longer period of time and are a more accepted form of alternative education than the more recent digital, disciplinary or choice schools.

One district referenced a charter school as an alternative for students in the district. This school, however, was run by the district and was not the independent charter school that frequently comes to mind.

Community Involvement

Community involvement in terms of specific organizations are in place in three distinct groups—governmental bodies, private companies, and nonprofit organizations. The governmental bodies involved included state, federal, and city entities. The most frequently mentioned and most of the "hands-on" involvement came from branches of the criminal justice system. Police departments, constables, city and county attorneys, and judges were referred to repeatedly as key elements in dropout strategies. State and

national governments were referenced in regard to grants that had been awarded to individual districts and targeted services provided by branches of the government. An example of service is drug counseling provided by county or state department of health. Grants were most frequently referenced as coming from the federal government. Collaborations with other school districts were also mentioned. For example, three districts join together to provide night schools in Colorado Springs.

Like grants, mentoring programs also involved private businesses. An example is the mentors provided to San Antonio by USAA Insurance. In other districts, local businesses and police provided mentors while others came from faith-based organizations. Some mentoring programs are supported by grants. For example, the Sacramento grant Linking Education and Economic Development comes from a Carnegie grant.

Nonprofit organizations were the third type of support provided by communities. Organizations mentioned by name included Big Brothers and Big Sisters, Boys and Girls Club, Boys and Girls Town, and Fathers and Sons. These organizations seemed to be primarily involved in prevention or tutoring.

Instructional Initiatives

Instructional programs in each district are driven primarily by required curriculum and state examinations in reading, math, language arts, social studies, and science. Thus, each school campus is held accountable for aligning instructional programs with exams. Some districts, however, have created smaller learning communities with mentors to assist students in areas of low performance. Professional Learning Communities were a strategy that appeared to be unique to Colorado Springs. These learning communities were described as systematic approaches to dealing with troubled students rather than relying on the individual teachers. The district is applying the teaching and mentoring strategies of Ruby Payne regarding children of color and poverty. Other districts mentioned a variety of programs regarding immigrant children, particularly from Mexico, that were in various stages of development.

The Miami-Dade Coordination of Services Teams seemed similar to Colorado Spring's Professional Learning Communities. Although not traditional staff development, both of these strategies bring together teachers to share information about a student. The resulting growth in understandings of how the system operates and the attitudes and responsibilities of others on the team or in the learning community should result in professional development by the teachers and coordinated support for the student.

The teaching of resiliency strategies to students was mentioned only by Los Angeles Unified School District. Although we are not familiar with the development of resiliency strategies in children, the district spokesperson indicated that it was hoped that this effort would result in more recognition for students, particularly those in troubled schools.

National Dropout Prevention Center Strategies

The strongest links among the districts to the 15 strategies recommended by the National Dropout Prevention Center were Numbers 1, 4, 9, and 13 (see Table 1). The first strategy, *evidence of systematic renewal,* included four related strategies: changing the system referenced, staff development implementation, district-level personnel involved, and staff designated for dropout programs. Strategy 4, *alternative schooling*, included six examples: charter schools, digital schools, elective and mandatory alternative campuses, hospital program, night school, and summer school and/or institutes. Strategy 9, *community collaboration*, includes support of civic clubs, support of private corporations, and involvement with the legal system (police, district attorney, juvenile courts, and county officials). In addition, Strategy 5, *instructional technologies*, includes the digital schools in Colorado Springs, and Strategy 13, *mentoring and tutoring*, is linked with mentoring and tutoring provided by private corporations, police, community nonprofit organizations, and by teachers and other staff members in the district. Thus, we found tenuous links to the 15 promising strategies created by the National Dropout Prevention Center.

Conclusions

The focus of the current study was on strategies used by 10 urban districts to reduce school dropouts. We attempted to identify strategies that the districts viewed as their frontline of attack in reducing dropouts as perceived by the person responsible for overseeing the district dropout prevention programs. Thirty-eight strategies for dropout prevention were mentioned by spokespersons under various labels and emphases. Some of the programs were labeled with a program name such as Professional Learning Communities whereas others are generic, such as alternative schools and summer institutes. Although the majority of the programs were discussed as dropout prevention, two districts referred to "recovery programs." We discovered that if district spokespersons mention their CEOs as taking a specific interest in reducing

dropouts, the program plans were more specific, and recovery programs were active. One surprise was the lack of mention of instructional initiatives for early intervention and dropout prevention. Only one district referred to instructional programming as one of their dropout prevention strategies. The most common reference was to more punitive strategies involving the criminal justice system, that is, police departments, district attorneys, judges, truant offices, and court procedures.

It appears that only three of the districts appointed administrators with sole responsibility for dropout prevention. Although three spokespersons indicated that dropout prevention was their primary concern, the other seven indicated reducing dropouts was one of their multiple responsibilities. This delegation of responsibility for dropout programs may be an artifact of the past central office administrative structures or of adding tasks to some and assigning other personnel to campus leadership positions to monitor new accountability mandates.

In spite of our efforts to glean rich information from district spokespersons, minimum strategies were mentioned that linked to the 15 strategies recommended by the National Dropout Prevention Center. Although evidence of system renewal, alternative schooling, community collaboration, and mentoring and/or tutoring strategies were prominent, the other 11 strategies had little if any links to actual programming in the districts. Again, although the spokespersons may have overlooked specialized instructional programs for early and ongoing intervention, the primary mention was in the digital schools in Colorado Springs.

Thus, as a result of our inquiry it is not surprising that the dropout rate remains unabated during the past 5 years. When one half of our urban children fail to finish high school, urban school CEOs must display system leadership and gain the support for community-wide dropout prevention programs that start with families with children beginning in their early years and continuing until graduation. The 15 strategies are an excellent beginning, and efforts to initiate them in the 10 districts need to be encouraged and funded if they and all urban districts are to slow down the numbers of broken lives because of dropping out of school.

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Prediction of Dropout Among Students With Mild Disabilities

A Case for the Inclusion of Student Engagement Variables

AMY L. RESCHLY AND SANDRA L. CHRISTENSON

ABSTRACT

This study examined the engagement of students with learning disabilities and emotional disturbance and the relation of this engagement to school completion. Participants were parent-identified students with learning disabilities (LD) and emotional or behavioral disorders (EBD) and comparison groups of average-achieving peers and students without disabilities who dropped out or stayed in school. Comparisons of the engagement of students with LD or EBD and average-achieving peers showed significant differences (but small in terms of effect sizes) and indicated that students with LD or EBD reported less desirable engagement than their average-achieving peers. After accounting for achievement test scores, grade retention, and socioeconomic status, student engagement variables were significant predictors of school dropout and completion for students with LD or EBD and students without disabilities. Implications of these results in terms of the construct of student engagement and school dropout and future directions for research are discussed.

IN A RECENT NATIONALLY TELEVISED COMMERCIAL, the following scenario occurred:

> A young, clean-cut adolescent boy is walking through a park. He comes upon an unkempt man sitting on a bench with a beggar's cup. The youth drops some change into the man's cup. The man says "Thank you," and asks the boy why he isn't in school. The boy sheepishly replies, "I dropped out." The unkempt man frowns and gives his cup of money to the young man in a gesture that implies, "You'll need this."

The scene is followed by a message about staying in school.

Early school departure has been a prominent national issue for the last 2 decades. One researcher characterized the interest in school dropout as "something of a national obsession" (Finn, 1989, p. 117); however, concern about the phenomenon is not unfounded. The consequences of early school departure reverberate throughout our society, with high costs to the individuals who drop out, their future families, and all tax-paying citizens. More recently, school completion has become a high-stakes issue for schools and school districts. Several researchers have argued for the use of school-level dropout rates as an indicator of school effectiveness (Rumberger & Thomas, 2000) and program effectiveness for students with disabilities (Blackorby, Edgar, & Kortering, 1991). With the recent passage of the No Child Left Behind Act (NCLB) of 2001, schools are held accountable for the completion rates of *all* students, including those who have not typically fared well—students who receive special education services, students of color, students who are English language learners, and students living in poverty.

One of the most vulnerable populations for school dropout consists of students with disabilities. Although the percentage of students with disabilities who dropped out of school decreased slightly from 1993–1994 to 2000–2001 (from 45.1% to 41.1%), these students exhibit an alarmingly

low rate of school completion compared to their peers in general education. For example, in the 1998–1999 school year, only 46.5% of students with disabilities graduated with a standard diploma (U.S. Department of Education, 2003), compared to approximately 75% of the general population of students (Kaufman et al., 1999; see Note 1).

Dropout rates reported for students with disabilities vary widely in the literature; however, students with learning disabilities (LD) or emotional or behavioral disorders (EBD; see Note 2) are consistently found to have the highest dropout incidence among special education students and students in general. The most recent government report on dropout among students with disabilities reported rates of 65.1%, 39.7%, and 38.7%, respectively, for the disability categories of EBD, speech–language disorders, and LD. As in the general population, these statistics vary by race and ethnicity. Asian students have the lowest dropout rates within the population of students with disabilities (28%), whereas the corresponding dropout rates for American Indian/Alaska Native, Black, and Hispanic students are 52.2%, 44.5%, and 43.5%, respectively (U.S. Department of Education, 2003).

The importance of school completion in the transition of students with disabilities to postsecondary life has received considerable attention (Blackorby & Wagner, 1996). Furthermore, transition planning is mandated by the Individuals with Disabilities Education Act (IDEA; 2004). However, it appears that students with disabilities do not fare well in their lives beyond high school in terms of employment or postsecondary education (Blackorby & Wagner, 1996). The picture is even more disturbing for students with disabilities who drop out of school, as they are less likely to be employed than high school graduates (Edgar, 1987; Hasazi et al., 1985; Levin, Zigmond, & Birch, 1985; Zigmond & Thornton, 1985) and earn less when employed (Blackorby & Wagner, 1996). Furthermore, dropouts with disabilities are less likely to earn a General Education Development (GED) diploma or alternative (7% vs. 6%; Horn & Berktold, 1999), and graduates and dropouts with disabilities are less likely to take college entrance exams (Rossi, Herting, & Wolman, 1997) or attend postsecondary institutions (Blackorby & Wagner, 1996; Horn & Berktold, 1999). Our society is becoming increasingly technological, and accordingly, the importance of postsecondary education is also increasing. It is not surprising, then, that the difference in wages between dropouts and graduates has become more disparate over time. In 1967, a male student who had dropped out earned 76% of what graduates with a diploma earned, whereas by 1992, this had decreased to 58% (Grubb, 1997). Ensuring that students complete school with the academic and social skills necessary for success is more important today than ever before in our society.

Despite the provision of specialized education programs; the high stakes of dropout for students, families, taxpayers, and schools; and the poor postschool outcomes for dropouts with disabilities, students with disabilities have only occasionally been the focus of dropout research (Kortering & Braziel, 1999; Wolman, Bruininks, & Thurlow, 1989) or prevention and intervention efforts (Lehr, Hansen, Sinclair, & Christenson, 2003). For example, most publications from government sources have reported only dropout rates and racial/ethnic information for students with disabilities who drop out of school. More generally, there is a paucity of dropout prevention and intervention research. In a recent review of this literature, Prevatt and Kelly (2003) found that only 30 of 259 articles on the topic of dropout and school completion that were published between 1982 and 2002 were intervention studies, and only 18 of these 30 studies included dropout as a dependent variable. Students with disabilities are largely underrepresented in this literature. In a separate review of the dropout intervention literature, Lehr et al. (2003) discovered that only 3 of the 45 studies that met criteria for inclusion in the review addressed students with disabilities, and 2 of those studies were conducted with the same intervention program.

Understanding Dropout

As one might surmise from Prevatt and Kelly's (2003) and Lehr et al.'s (2003) literature reviews, the current literature base in the area of dropout consists primarily of descriptive studies. As Christenson, Sinclair, Lehr, and Godber (2001) noted, "Currently, we know considerably more about who drops out than we do about the essential intervention components for whom and under what conditions" (p. 471). Predictors of dropout have been organized into proximal (e.g., attendance, homework completion) and distal (e.g., socioeconomic status) variables (Rumberger, 1995) and according to amenability to intervention (Christenson, Sinclair, Lehr, & Hurley, 2000). Status predictors of dropout—those that are not amenable to intervention—are variables like race; socioeconomic status (SES); attending a large, urban school; and having a parent or sibling that dropped out of school. Other predictors are characterized by Wolman, Bruininks, and Thurlow (1989) as early transition to adulthood factors, such as pregnancy, marriage, and work.

Alterable predictors of dropout may be classified as being a protective factor for school completion or a risk factor for dropout. These variables exist at student, family, and school levels. Alterable variables at the student level include homework completion, attendance, behavior, preparation for class, and expectations to complete school; this list is not exhaustive (see Note 3). At the parent level, providing academic and motivational support for learning, monitoring their children's activities, and having high but realistic expectations for school completion are associated with school completion, whereas high mobility, low educational expectations, and permissive parenting are associated with an increased risk of dropping out. School-level variables associated with lower dropout rates include orderly school environments; committed, caring teachers; and fair discipline policies. Con-

versely, variables associated with higher dropout rates include large schools (> 1,000 students), high student–teacher ratios, poor or uninteresting curricula, low expectations, and high truancy.

The Personal Side of Dropout

The decision to drop out of school is complex and multifaceted. There is evidence that dropouts, whether in general or in special education, often experience difficulty with academic requirements (deBettencourt, Zigmond, & Thornton, 1989; Ekstrom et al., 1986; Kortering, Horing, & Klockars, 1992; Zigmond & Thornton, 1985). However, academic achievement is only part of the picture. Studies of peer and student–teacher relationships and students' own reports of why they dropped out of school reveal much more than low achievement and reflect the consequences of social and interpersonal aspects of schooling. As Pianta (1999) noted, "No amount of focus on academics, no matter how strong or exclusive, will substantially change the fact that the substrate of classroom life is social and emotional" (p. 170).

The results of the few studies including dropouts with disabilities mirror those conducted with the general population of students, indicating the importance of the interpersonal and contextual aspects of students' experiences at school. For example, Seidel and Vaughn (1991) found that students with LD who dropped out of school reported greater social isolation from their teachers and peers than students with LD who remained in school. Kortering and Braziel (1999) interviewed 44 dropouts with mild disabilities (LD, behavioral disorder, and mild mental retardation); 68% of the respondents felt that specific changes to their own attitudes and effort, school policies (e.g., discipline, attendance), and teachers' behaviors could have prevented them from dropping out of school. The primary theme in their recommendations for preventing peers from dropping out was the need for teachers and administrators to change their attitudes and the way they treated students. Other recommendations included more or better teaching and more engaging classes and texts.

In another study, Kortering and Braziel (2002) interviewed 185 secondary students with LD regarding their views of high school and school completion. The largest category of changes that these students suggested to help them stay in school were school related and reflected their desire for more individual help, rule and class changes, and changes in teacher attitudes to allow for greater autonomy and better treatment (e.g., less yelling, being nicer to students). Students were also asked about their thoughts regarding effective teaching—specifically, how a teacher had helped them. The largest category of responses centered on teachers who had offered special help or were perceived as caring (25%), followed by individualized instruction (22%), hands-on activities (16%), and explaining things in a way so that the student could understand (13%).

Student Engagement

Although the word *dropout* implies a short-term event, it is perhaps best viewed as a gradual process of withdrawal from school. This process of withdrawal has been explained through theories of student engagement. Student engagement has been described as the critical variable in dropout prevention and intervention efforts (Grannis, 1994) and as "the key to dropout on the personal side of the equation" (Alexander, Entwisle, & Horsey, 1997, p. 89). The most influential theory of student engagement is Finn's (1989) *participation–identification model*. In this model, engagement encompasses behavioral and psychological components, focusing on students' involvement in classroom and school activities and feelings of bonding or identification with school.

Finn (1989) delineated four levels of involvement in the school environment, ranging from the most basic forms of participation (e.g., attending school, work preparation, responding to the teacher's directions) to student involvement in decision making in the school environment (e.g., through student government or academic goal setting). As students progress through the educational system, they have greater opportunities to be involved in nonacademic aspects of the school environment. As depicted in Figure 1, student participation in school activities is related to successful school performance, which in turn promotes identification with school. In the next step of the model, students' identification with school affects their ongoing participation.

Most students come to school ready and willing to participate in and outside of the classroom, which promotes a positive sense of identification with school and value for educational goals and experiences. Although these students encounter difficulties and frustration during the course of their education, these experiences are not sufficient to interrupt their ongoing cycle of participation and identification with school. These students are likely to persist and complete their education. Conversely, some students begin school without the prerequisite attitudes and behaviors for successful participation in the school environment. Over the years, they are less likely to demonstrate increased and varied forms of participation in the school environment (e.g., initiative taking in the classroom, participating in extracurricular activities) and are likely to develop increased feelings of alienation from school (Finn, 1989). These are the students who are at risk for dropping out of school.

Evidence of Student Engagement

Evidence of the importance of student engagement for school completion and success has accumulated in the areas of achievement and school completion (Connell & Wellborn, 1991; Finn & Cox, 1992; Finn & Rock, 1997). Furthermore, it is possible to predict with a high degree of accuracy which students will drop out of school on the basis of their engagement in early elementary school (e.g., Alexander et al., 1997;

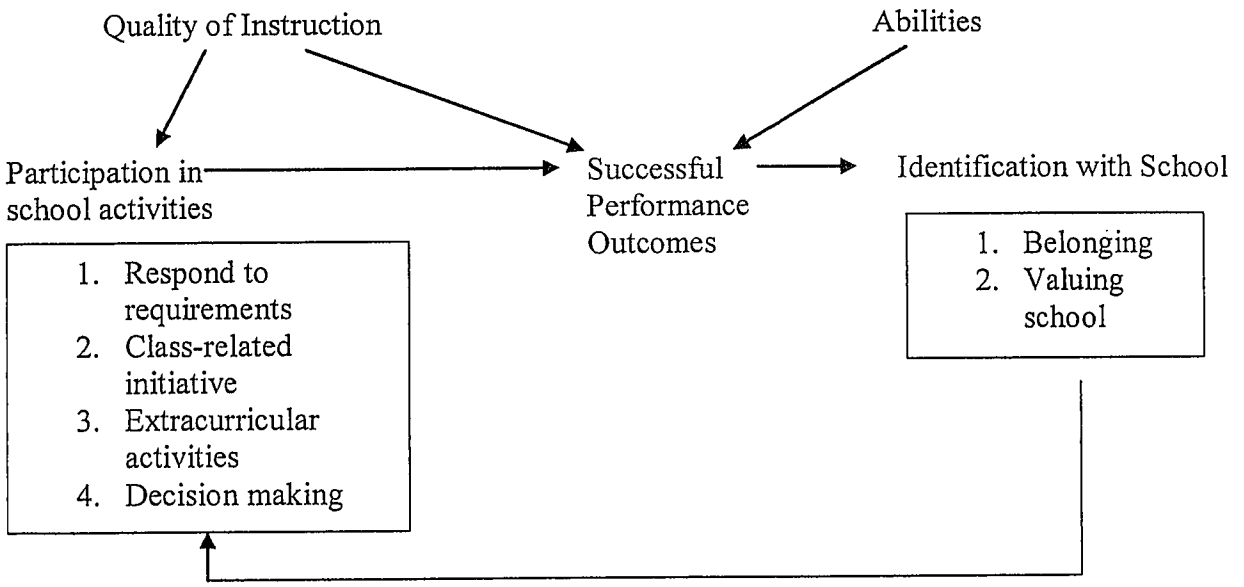

FIGURE 1. Finn's participation–identification model of school engagement. Adapted from Finn (1989), p. 130.

Barrington & Hendricks, 1989; Ensminger & Slusarcick, 1992). For example, after accounting for demographic variables, Alexander, Entwisle, and Horsey (1997) found that students' engagement behaviors (attendance and behavior) and attachment to school in the first grade predicted dropout several years later. In terms of attendance, dropouts averaged 16 absences in first grade, compared to 10 absences for graduates. Each additional absence was estimated to increase the likelihood of dropout by 5% (Alexander et al., 1997).

Other studies also have supported the role of student engagement in achievement and school completion. In a study of classroom participation of fourth graders, Finn and Cox (1992) found that students who were classified by their teachers as active participants (e.g., almost always paying attention and putting forth effort even when tasks were difficult), passive participants, and nonparticipants (e.g., perceived by teachers as not usually paying attention nor putting forth considerable effort in their work, frequently requiring reprimands from teachers) differed significantly in terms of their current attendance at school and achievement since the first grade. Also, Finn and Rock (1997) found that engagement behaviors (e.g., attendance, working hard, completing homework, paying attention in class, preparation) significantly differentiated successful school completers, unsuccessful school completers, and school dropouts among 1,803 minority students from low-income backgrounds. Finally, a study of high school students by the National Center for Education Statistics found that students who participated in school-based extracurricular activities differed from nonparticipants in several ways. Students who participated in extracurricular activities showed better attendance at school, were three times more likely to be in the top quartile in reading and math, and were more likely to aspire to postsecondary education than nonparticipants (O'Brien & Rollefson, 1995).

According to Finn's (1989) model, students' feelings of belonging at school are an important aspect of their engagement. Belonging has been described as "students' sense of being accepted, valued, included, and encouraged by others (teachers and peers) in the academic classroom setting and of feeling oneself to be an important part of the life and activity of the class" (Goodenow, 1993, p. 25). Students' feelings of belonging at school are negatively related to absences and tardiness (Finn, 1993; Goodenow, 1993) and dropping out (Yazejian, 1999) and are associated with positive attitudes toward school, engagement, participation, and investment in learning (Osterman, 2000). Surveys and qualitative studies of dropouts with and without disabilities also have indicated that the social aspects of the school environment are an important part of the educational process, including dropout and completion (e.g., Berktold, Geis, & Kaufman, 1998; Marcus & Sanders-Reio, 2001; Tidwell, 1988).

Taxonomy of Student Engagement

Recently, we have proposed four types of student engagement (Christenson & Anderson, 2002). The purpose of these types, or taxonomy, is to connect work in student engagement to dropout intervention. The taxonomy is based on the theoretical work of Finn (1989), McPartland's (1994) delineation of the essential components of dropout intervention programs (i.e., students need to experience success at school; a positive interpersonal climate is a crucial part of the school experience; coursework should be relevant to students' lives and future goals; students need help with personal problems to be successful as learners), and our own work with the *Check &*

Connect dropout prevention program. We have broadly conceptualized *engagement* to include more than just *academic* engagement, or the amount of time that students spend on task. Engagement is multidimensional and also includes *behavioral* (e.g., attendance, participation), *psychological* (e.g., relationships with teachers and peers, belonging), and *cognitive* aspects (e.g., boredom, relevance of education to future, self-regulation). Academic and behavioral engagement are observable indicators, whereas cognitive and psychological engagement are internal forms of engagement, requiring a higher level of inference (Sinclair, Christenson, Lehr, & Anderson, 2003).

This study examines the engagement of students with disabilities and the association of engagement to later school dropout or completion. The specific research questions were as follows:

1. How does the engagement of students with mild disabilities compare to that of their average-achieving peers?
2. How well do SES, achievement test scores, grade retention, and student engagement variables measured in the eighth grade predict dropout among students with LD or EBD and students without disabilities?

Method

Data Source

Data for this study came from the National Educational Longitudinal Study (NELS). NELS was the third longitudinal study of elementary and secondary students in the United States conducted by the National Center for Education Statistics (NCES) in the U.S. Department of Education. NELS began in 1988 with a nationally representative sample of eighth graders and was completed in 2000 (Curtin, Ingels, Wu, & Heuer, 2002). This study used data collected while the students were in middle school and high school. In each of the in-school data collections, information came from students, teachers, parents, and school administrators.

NELS employed a clustered, stratified national probability sample, with schools as the first sampling unit and students as the second sampling unit. A total of 1,052 public and private schools with eighth grades participated in the first stage of the study—a participation rate of approximately 70% (Ingels et al., 2002). However, Bureau of Indian Affairs schools, special education schools, area vocational schools that did not directly enroll students, schools on military bases, and public and private schools with ungraded classrooms were not included in the initial sample. After selecting the schools, 26 students were randomly selected in each school. Students of Asian and Hispanic descent were purposely oversampled. The student response rate was 94% (N = 24,599). Approximately 5% of the potential student sample was excluded for reasons of severe mental disability (3%), limited English proficiency (2%), and physical or emotional problems (.41%). Participation decisions were made by school staff at each site (Curtin et al., 2002).

Identification of Students With Disabilities

As mentioned previously, this study investigated the engagement of students with LD and EBD. Unfortunately, discerning disability status from the four sources of information included in NELS (parents, teachers, students, and school officials) was not a simple process (Rossi et al., 1997). The NCES definition for parent identification of disabilities was followed in this study. This definition implies that a student has a particular problem—in this case, learning or emotional/behavioral problem—*and* has received one or more disability-related services (Rossi et al., 1997). According to Hodapp and Krasner (1994; cited in Rossi et al., 1997), this definition may reduce errors by parents in identifying their child as having a disability and implies agreement between schools and parents on students' disability status.

A final caution regarding studies of students with disabilities in NELS is warranted. NCES estimates that as many as 50% of students served under IDEA were excluded from the base year sample. Therefore, NELS data should not be considered representative of all students with disabilities as identified under IDEA (Rossi et al., 1997). Clearly, students with severe and profound disabilities were not included in the sample; however, it is likely that students with the most severe forms of mild disabilities, such as LD and EBD, were also excluded from participation.

Almost 12% of students in NELS were identified by their parents as having one or more disabilities. Parent-identified students with disabilities were more often male, had lower scores on locus-of-control measures, were less likely to take college entrance exams, and were slightly older than those not identified as having disabilities (Rossi et al., 1997). Approximately 24% of parent-identified students with disabilities were members of ethnic or racial minority groups (Asian or Pacific Islander, Hispanic, Black, American Indian, and Alaskan Native). Finally, parent-identified students with disabilities were more likely than students without disabilities to

- take remedial courses,
- earn fewer credits in core curriculum,
- be retained prior to eighth grade,
- earn lower scores on math and reading proficiency tests, and
- drop out of school.

Participants

Study participants were parent-identified students with learning disabilities or serious emotional disturbance. Of the NELS sample, 1,064 students were identified as having LD, 338 as having EBD, and 96 as having both LD and EBD. Base year students without LD or EBD who showed average achievement (i.e., between the 25th and 75th percentile) in both reading and math were selected as the comparison group to address Research Question 1 (unweighted n = 6,897; see Note 4), whereas school dropouts (unweighted n = 1,585) and completers (unweighted n = 13,302) without disabilities were used as a comparison group for Research Question 2. Table 1 provides information reported by NCES regarding the grade retention and dropout status of parent-identified students with LD and EBD and students without disabilities.

Measures

Several variables were selected or created from the base year student survey to represent aspects of students' engagement with school. Three of the four types of engagement variables proposed by Christenson and Anderson (2002) were used: behavioral, cognitive, and psychological/interpersonal. Seven variables represented students' behavioral engagement with school, and two each represented cognitive engagement and psychological/interpersonal engagement. Students' SES, achievement scores (mathematics and reading standardized test composite), and grade retention prior to eighth grade were used as covariates in regression analyses. A prior study of dropout with the NELS dataset demonstrated that when SES was accounted for, ethnicity was no longer a significant predictor of dropout (Rumberger, 1995); thus, SES rather than ethnicity was used as a covariate of dropout in this study. A description of covariates and engagement, grouping, and outcome variables is given in Table 2.

In general, for the computation of scales and factor composites, missing values were replaced with the sample mean. One exception, however, was the homework variable, in which the median was used to replace missing values, because of the skewness of the distribution. Items answered on an agreement scale were recoded so that higher numbers reflected more agreement, whereas responses indicating that something did not occur (e.g., coming to class without pencil, paper, or books), were coded as 0.

Data Analysis

Design Effects and Weights. There are myriad statistical issues involved with the analysis of NELS data. Perhaps the most important issue is referred to as *design effect.* Design effects are a problem because of the stratified, clustered probability sampling methodology employed in NELS. Therefore, "statistics are more variable than they would have been had they been based on data collected from a simple random sample of the same size" (NCES, 2002, p. 27). In more general terms, (a) students' scores within schools were not independent because of a common set of school experiences (Voelkl, 1995), and (b) without providing some correction for design effects, there is an inflation of significance, or an increase in Type I errors. Another issue with the analysis of NELS data involves the use of weights. NCES provides a series of weights that, when used appropriately, allow a researcher to generalize to national populations of interest (see Note 5). The weights correct for the unequal probability of selection and adjust for biases introduced by nonresponse (NCES, 2002).

Data Analysis in the Present Study. For the purpose of this study, an approach employed by Finn (1993) and Voelkl (1995) corrected for design effects. Students' responses on variables of interest were re-expressed as deviations from their school mean, thus "holding schools constant before the data were analyzed" (Voelkl, 1995, p. 133). For Research Question 1, the eighth-grade cross-sectional weight (BYQWT) was used as the weighting variable, whereas for Research Question 2, the eighth-grade panel weight from the 1992 follow-up (F2PNLWT) was employed.

Results

MANOVA

To answer Research Question 1 (How does the engagement of students with mild disabilities compare to that of their average achieving peers?), a multivariate analysis of variance (MANOVA) was conducted. Students with LD or EBD or both were included in the mild disabilities group (unweighted n = 1,498), whereas students not identified as having LD or EBD, with achievement between the 25th and 75th percentiles in both reading and mathematics (unweighted n =

TABLE 1. Characteristics of Parent-Identified Students With Learning Disabilities and Emotional or Behavioral Disorders and Control Students

	Weighted %		
Disability status	Minority	Grade retention	Dropped out
LD	18.3	52.8	26.0
EBD	27.9	43.4	49.9
ND	26.9	17	14.8

Note. Data from Rossi, Herting, and Wolman (1997). LD = learning disabilities; EBD = emotional/behavioral disorder; ND = no disability.

TABLE 2. Names and Descriptions of Variables Used and Created for This Study

Variable	Type	Description
		Covariates
SES	C	NCES composite constructed using the following items from the parent survey: BYP30, BYP31, BYP34B, BYP37B, and BYP80. Variables represent the father's education level, mother's education level, father's occupation, mother's occupation, and family income.
Grade retention	It	BYS74 was obtained from the Base Year Student Survey. Responses were recoded as *no* = 0 and *yes* = 1. Missing or incomplete data coded as 0.
Achievement	C	NCES composite BY2XCOMP; reading and mathematics standardized test composite.
		Engagement variables
Behavioral engagement		
Attendance		
Absences	It	*How many days of school did you miss over the past four weeks?* (BYS75). Responses coded as *none* = 0; *1 or 2 days* = 1; *3 or 4 days* = 2; *5 to 10 days* = 3; *more than 10 days* = 4.
Tardiness	It	*How many times were you late for school over the past four weeks?* (BYS77). Responses coded as *none* = 0; *1 or 2 days* = 1; *3 or 4 days* = 2; *5 to 10 days* = 3; *more than 10 days* = 4.
Skipping classes	It	*How often do you cut or skip classes?* (BYS76). Responses coded as *never or almost never* = 0; *sometimes but less than once a week* = 1; *not every day, but at least once a week* = 2; *daily* = 3.
Preparation	FC	Factor composite of 3 items (BYS78A, BYS78B, BYS78C): *How often did you come to class and find yourself without these things: (a) pencil or paper, (b) books, (c) your homework done.* Responses coded as *never* = 0; *seldom* = 1; *often* = 2; *usually* = 3. One factor extracted. Eigenvalue =1.88, accounts for 62.8% of the variance.
Behavior	FC	Factor composite of 3 items: *(a) I was sent to the office because I was misbehaving; (b) my parents received a warning about my behavior; (c) I got into a fight with another student.* Responses coded as *never* = 0; *once or twice* = 2; *more than twice* = 3. One factor extracted. Eigenvalue = 2.00, accounts for 66.8% of the variance.
Extracurricular participation	C	School-based extracurricular activities (BYS82A–BYS82T). If the student did not participate in the activity, coded as 0; if participated as either a member or an officer, coded as 1. Items were added together to yield the number of extracurricular activities in which each student participated. Missing responses were replaced with the scale mean.
Homework	C	*In the following subjects, how much time do you spend on homework each week? Mathematics, Science, English, Social Studies, All Other Subjects.* Responses coded as *none* = 0; *less than 1 hour* = 2; *2 hours* = 3; *4–6 hours* = 4; *7–9 hours* = 5; *10 or more hours* = 6. Items added together to create a scale of homework, ranging from *low* = 0 to *high* = 35. Missing values were replaced with the scale median.
Psychological/interpersonal engagement		
School Warmth Scale[a]	FC	Factor composite of 6 items: *(a) teachers are interested in students; (b) most of my teachers really listen to what I say; (c) students get along well with teachers; (d) there is real school spirit; (e) when I work hard on schoolwork, my teachers praise my effort; (f) in class I feel put down by my teachers.* Responses for Items 1–5 coded as *strongly disagree* = 1; *disagree* = 2; *agree* = 3; *strongly agree* = 4. Item 6 was reverse coded. One factor extracted. Eigenvalue = 2.59, accounts for 43% of the variance.
Interaction with teachers	C	Composite of 6 items reflecting interaction with teachers for various reasons: *Talk to teachers about (a) jobs/career following high school; (b) improving schoolwork; (c) courses at school; (d) studies in class; (e) drug/alcohol abuse; (f) personal problems.* Responses coded as *no* = 0 and *yes* = 1. Missing responses coded as 0. Composite range = 0–6.

(Table continues)

(Table 2 continued)

Variable	Type	Description
Cognitive engagement		
Utility[b]	FC	Factor composite of 4 items: *(a) math will be useful to my future; (b) English will be useful to my future; (c) social studies will be useful to my future; (d) science will be useful to my future.* Responses coded as *strongly disagree* = 1; *disagree* = 2; *agree* = 3; *strongly agree* = 4. One component extracted. Eigenvalue = 1.99, accounts for 49.7% of the variance.
Boredom	It	*Do you ever feel bored at school?* Responses coded as *never* = 0; *once in a while* = 1; *about half of the time* = 2; *most of the time* = 3.
		Outcome and grouping variables
Dropout status	C	NCES composite measure of dropout status determined from school, parent, and student reports through the 2nd follow-up. F2EVDOST indicates whether the student ever dropped out in the 1st or 2nd follow-up. Retained status regardless of re-enrollment. Provides a dropout history since the beginning of the 1st follow-up in March, 1989.
AA comparison group	G	Calculated from BY2XRQ and BY2XMQ. Students scoring between the 25th and 75th percentiles in both reading and mathematics were selected as part of this group.
Students with LD	G	Students whose parent indicated that his/her child had both a specific learning problem (BYP47G) and received services for a learning problem (BYP48G).
Students with EBD	G	Students whose parent indicated that his/her child had an emotional problem (BYP47H) and received services for an emotional problem (BYP48H).
Completers and dropouts with ND	G	This variable was constructed from a combination of variables (BYP47 and BYP48) from the Base Year Parent Survey. Students whose parents had identified them as both having a specific problem and receiving services for that problem (hearing, deafness, speech, orthopedic, physical disability, other health problem) were removed from the data file to create a set of students that had not been identified as having a disability.

Note. C = composite; It = single item; FC = factor analysis composite; G = grouping variable; SES = socioeconomic status; NCES = National Center for Education Statistics; AA = average achieving; LD = learning disabilities; EBD = emotional or behavioral disorder; ND = no disability. Other acronyms are NCES variable designations.

[a]Scale used in Voelkl (1995). [b]Used by Rumberger (1995) and Finn (1993).

6,897), served as the average-achieving comparison group. The results appear in Table 3.

Although all comparisons between the average-achieving students and students with mild disabilities were significant, the effect sizes were quite small and, in one case (extracurricular activities), zero. On average, students with mild disabilities were more likely to have behavior problems at school (e.g., sent to office for misbehavior, warning sent to parents, fighting with another student); to be less prepared for classes and to complete less homework; to report higher levels of absences, cutting classes, and tardiness; and to have lower perceptions of school warmth and the utility of education to their futures. Conversely, students with mild disabilities reported more interactions with teachers and slightly less boredom at school. It is unknown from these data, however, how the interactions between teachers and students were initiated and whether the interactions between teachers and students were neutral, positive, or negative in nature.

Logistic Regression Analyses

A series of stepwise logistic regressions were used to answer the second research question (How well do SES, achievement test scores, grade retention, and student engagement variables measured in the eighth grade predict dropout among students with LD or EBD and students without disabilities?). Students who were identified as having both LD and EBD were excluded from the regression analyses. Frequency analyses with this group of students revealed that the cell sizes were too small (< 30) on the grade retention and dropout variables to analyze this group separately. Students included in these analyses were students with LD or EBD and students not identified as having disabilities by their parents.

The covariates—grade retention, SES, and a composite measure of standardized test scores in mathematics and reading—were entered as a block in Step 1 in all the logistic regressions. For each of the three groups of students, five

TABLE 3. MANOVA of Engagement Variables Comparing Average-Achieving Students and Students With Mild Disabilities

Variable	AA		MD			
	M	*SD*	*M*	*SD*	*F*	η^2
Behavioral engagement						
Behavior	−0.08	0.99	0.41	1.30	31136.66**	.03
Preparation	−0.05	0.96	0.31	1.23	17216.67**	.02
Tardiness	−0.04	0.76	0.14	0.92	7249.05**	.007
Absences	−0.03	0.93	0.18	1.13	6030.96**	.006
Skipping classes	−0.01	0.36	0.08	0.54	7006.36**	.007
Homework	−0.10	4.77	−0.69	4.74	2127.40**	.002
Extracurricular activities	−0.13	2.20	−0.08	2.84	74.73**	.000
Psychological/interpersonal engagement						
School warmth	−0.03	1.01	−0.12	1.08	1201.06**	.001
Interaction with teachers	−0.03	1.59	0.11	1.71	1051.02**	.001
Cognitive engagement						
Utility	−0.03	1.00	−0.18	1.12	2875.41**	.003
Boredom at school	0.06	0.92	0.004	0.82	530.12**	.001

Note. BYQWT was used as weighting variable in this analysis. AA = average-achieving students; MD = students with mild disabilities.
**$p < .001$.

regression models were calculated. Model 1 consisted of the covariates alone, whereas Models 2, 3, and 4 included the covariates and each set of engagement predictors (behavioral, psychological/interpersonal, and cognitive, respectively) and Model 5 was a full model of all predictors together.

Logistic regressions provide the percentage of students correctly classified into the dichotomous outcome variable groups and provide a statistic referred to as the *log odds*. Rumberger (1995) described the log odds from the logistic regression as "the predicted odds of dropping out with a one-unit increase in the independent variable to the predicted odds without the one-unit increase" (p. 603). A log odds value of 1 indicates no change in the odds of dropping out due to the independent variable, whereas values less than 1 indicate a decrease in the odds of dropping out due to a one-unit increase in the independent variable (Rumberger, 1995). Logistic regression results by student groups appear in Tables 4, 6, and 7.

Students With EBD. The covariates (Model 1) correctly classified 70.7% of students with EBD (see Table 4). Not surprisingly, each of the covariates was a significant predictor of dropout among students with EBD. The strongest of these predictors was grade retention. Students who had not been retained had 73% lower odds of dropping out than those who were retained. The addition of the behavioral engagement variables (Model 2) increased the percentage of students correctly classified to 82.3%. Each unit increase of school misbehavior was associated with 19% greater odds of dropping out, whereas better preparation for class, more homework completion, and less tardiness were associated with a decrease in the odds of dropping out of school (7%, 17%, and 36%, respectively). Absences were also associated with an increase in the odds of dropping out of school (22%); however, the strongest behavioral engagement predictor of dropout was cutting classes. The odds of dropping out of school were three times greater for every unit increase in the cutting classes variable.

After accounting for the covariates, the cognitive and psychological/interpersonal engagement variables did little to improve the classification of students with EBD who dropped out or stayed in school. However, higher perceptions of school warmth did decrease the odds of dropping out of school by 20%, whereas being bored at school increased the odds of dropping out by 35%. In Model 5, the full model, the independent variables correctly classified 82.7% of students.

Two interesting findings emerged from these regression models. First, although reports of boredom at school were associated with an increase in the odds of dropping out when the cognitive engagement variables were run alone with the covariates (Model 4), in the final model, the opposite result was obtained—that is, perceptions of boredom were significantly associated with a *decrease* in the odds of dropping out of school. The independent variable (utility of education to future) produced an interesting and counterintuitive association with the dependent variable in the final model, indicating that higher perceptions of utility were associated with an increase in the odds of dropping out.

TABLE 4. Logistic Regression Analysis of Dropout Among Students With Emotional/Behavioral Disorders

Variable	Model 1 β	Model 1 Log odds	Model 2 β	Model 2 Log odds	Model 3 β	Model 3 Log odds	Model 4 β	Model 4 Log odds	Model 5 β	Model 5 Log odds
Covariates										
Achievement test scores	.005**	1.01	.002**	1.00	−.003**	1.00	.010**	1.01	.008**	1.01
SES	−.887**	.41	−1.34**	.26	−.870**	.42	−.935**	.39	−1.34**	.26
Grade retention	−.329**	.27	−2.02**	.13	−1.33**	.264	−1.55**	.21	−2.07**	.13
% Correctly classified	70.7									
Behavioral engagement										
Behavior			.171**	1.19					.208**	1.23
Preparation			−.078**	.93					.110**	.95
Tardiness			−.451**	.64					−.308**	.74
Absences			.198**	1.22					.165**	1.18
Skipping classes			1.12**	3.07					1.09**	2.97
Homework			−.181**	.83					−.206**	.81
Extracurricular activities			−.022**	.98					−.064**	.94
% Correctly classified			82.3							
Psychological/interpersonal engagement										
School warmth					−.219**	.80			−.184**	.83
Interaction with teachers					.162**	1.18			.013**	1.01
% Correctly classified					73.3					
Cognitive engagement										
Utility							.176**	1.19	.395**	1.46
Boredom							.299**	1.35	−.232**	.79
% Correctly classified							73.6		82.7	

Note. F2PNLWT was used as the weighting variable in this analysis. Model 1 = covariates only; Model 2 = covariates and behavioral engagement variables; Model 3 = covariates and psychological/interpersonal engagement variables; Model 4 = covariates and cognitive engagement variables; Model 5 = covariates and all engagement variables.

**$p < .001$.

An examination of the correlations among the variables provided little illumination (see Table 5). Although significant, neither boredom nor utility showed a large correlation with dropout status (rs = .10 and .11, respectively, $p < .001$). There was a small negative correlation between boredom at school and utility of education to one's future ($r = -12$, $p < .001$). Boredom, however, appeared to have moderate significant correlations with other variables in the model. As one might expect, boredom was significantly positively correlated with student preparation and behavior (higher values reflected poorer preparation and behavior), absences, tardiness, and cutting classes (rs = .57, .46, .22, .41, and .40, respectively, $p < .001$) and negatively correlated with the amount of time students spent on homework, school warmth, and interaction with teachers (rs = −.31, −.27, and −.13, respectively, $p < .001$). Utility had moderate correlations with extracurricular activities and school warmth (rs = .40 and .46, respectively, $p < .001$).

Students With LD. The covariates (Model 1) correctly classified 77% of students with LD who dropped out or completed high school (see Table 6). Higher SES was associated with a reduction in the odds of dropping out of school for students with LD (71% reduction in odds for each standard deviation above the mean), whereas not having been retained a grade in school was associated with a 33% decrease in the odds of dropping out of school. The behavioral engagement variables and covariates (Model 2) correctly classified 80% of students with LD. As with the students with EBD, cutting classes was the strongest behavioral engagement predictor of dropout, followed by absences and misbehavior. The odds of dropping out of school were two times greater for every unit increase in the cutting classes variable, whereas each unit increase in absences and misbehavior increased the odds of dropout by 45% and 31%, respectively.

The psychological/interpersonal engagement variables did little to improve the classification of students with LD who dropped out versus those who stayed in school. However, more positive perceptions of school warmth were associated with a 14% decrease in the odds of dropping out of school. The inclusion of the cognitive engagement variables increased the classification of dropouts and completers with LD to 80% (Model 4). Higher perceptions of the utility of education to one's future decreased the odds of dropping out by 15%, whereas boredom at school increased the odds of dropping out by 11%. In the final regression model, 81% of students were correctly classified. When all variables were taken into account, the reduction in the odds of dropping out of school associated with more positive perceptions of school warmth was decreased (from 14% to 4%), and boredom at school was no longer a significant predictor.

Students Without Disabilities. Model 1 (covariates alone) correctly classified 84% of students without disabilities (see Table 7). Again, grade retention was a powerful predictor. Not having been retained was associated with a 73% reduction in the odds of dropping out of school. Together, the behavioral engagement variables correctly classified 86% of students. The most powerful predictors of dropout for students without disabilities were absences and behavior. Each

TABLE 5. Correlations Among Engagement and Outcome Variables for Students With Emotional/Behavioral Disorders

Variable	1	2	3	4	5	6	7	8	9	10	11
Behavioral engagement											
1. Behavior	—	.57**	.34**	.21**	.52**	−.30**	.01*	−.06**	.04**	−.01	.46**
2. Preparation		—	.33**	.39**	.52**	.41**	.18**	.00	.03**	.12**	.57**
3. Tardiness			—	.20**	.31**	−.13**	−.09**	−.03**	−.20**	−.17**	.41**
4. Absences				—	.36**	−.16**	.21**	−.02*	.31**	.10**	.22**
5. Skipping classes					—	−.43**	−.12**	.12**	.05**	.02**	.40**
6. Homework						—	.17**	.01**	.09**	.19**	−.31**
7. Extracurricular activities							—	.24**	.30**	.40**	−.15**
Psychological/interpersonal engagement											
8. School warmth								—	.17**	.46**	−.27**
9. Interaction with teachers									—	.21**	−.13**
Cognitive engagement											
10. Utility										—	−.12**
11. Boredom											—

*$p < .05$. **$p < .001$.

TABLE 6. Logistic Regression Analysis of Dropout Among Students With Learning Disabilities

Variable	Model 1 β	Model 1 Log odds	Model 2 β	Model 2 Log odds	Model 3 β	Model 3 Log odds	Model 4 β	Model 4 Log odds	Model 5 β	Model 5 Log odds
Covariates										
Achievement test scores	−.012**	.99	−.008**	.99	−.012**	.99	−.010**	.99	−.009**	.99
SES	−1.139**	.32	−1.21**	.29	−1.14**	.32	−1.16**	.31	−1.176**	.31
Grade retention	−.382**	.68	−3.99**	.67	−.397**	.67	−.544**	.58	−.490**	.61
% Correctly classified	76.7									
Behavioral engagement										
Behavior			.266**	1.31					.287**	1.33
Preparation			.112**	1.12					.110**	1.12
Tardiness			.073**	1.08					.092**	1.10
Absences			.372**	1.45					.387**	1.47
Skipping classes			.678**	1.97					.660**	1.93
Homework			.056**	1.06					.070**	1.07
Extracurricular activities			.083**	1.09					.078**	1.08
% Correctly classified			80.0							
Psychological/interpersonal engagement										
School warmth					−.149**	.86			−.046**	.96
Interaction with teachers					−.007†	.993			−.051**	.95
% Correctly classified					77.0					
Cognitive engagement										
Utility							−.166**	.85	−.184**	.83
Boredom							.107**	1.11	−.012	.998
% Correctly classified							80.0		81.0	

Note. F2PNLWT was used as the weighting variable in this analysis. Model 1 = covariates only; Model 2 = covariates and behavioral engagement variables; Model 3 = covariates and psychological/interpersonal engagement variables; Model 4 = covariates and cognitive engagement variables; Model 5 = covariates and all engagement variables.
**$p < .001$. †$p = .07$.

TABLE 7. Logistic Regression Analysis of Dropout Among Students Without Disabilities

Variable	Model 1 β	Model 1 Log odds	Model 2 β	Model 2 Log odds	Model 3 β	Model 3 Log odds	Model 4 β	Model 4 Log odds	Model 5 β	Model 5 Log odds
Covariates										
Achievement test scores	−.021**	.98	−.019**	.98	−.020**	.98	−.022**	.98	−.202**	.98
SES	−.700**	.50	−.836**	.43	−.704**	.50	−.708**	.49	−.853**	.43
Grade retention	−1.31**	.27	−1.18**	.31	−1.32**	.27	−1.33**	.27	−1.18**	.31
% Correctly classified	84.3									
Behavioral engagement										
Behavior			.401**	1.49					.395**	1.48
Preparation			.069**	1.07					.064**	1.07
Tardiness			.174**	1.19					.187**	1.21
Absences			.412**	1.51					.409**	1.51
Skipping classes			.095**	1.10					.068**	1.07
Homework			.004**	1.00					.000	1.00
Extracurricular activities			−.023**	.98					−.022**	.978
% Correctly classified			85.6							
Psychological/interpersonal engagement										
School warmth					−.153**	.86			.021**	1.02
Interaction with teachers					.046**	1.05			.016**	1.02
% Correctly classified					84.0					
Cognitive engagement										
Utility							−.023**	.97	.072**	1.07
Boredom							.248**	1.28	.088**	1.09
% Correctly classified							84.6		85.8	

Note. F2PNLWT was used as the weighting variable in this analysis. Model 1 = covariates only; Model 2 = covariates and behavioral engagement variables; Model 3 = covariates and psychological/interpersonal engagement variables; Model 4 = covariates and cognitive engagement variables; Model 5 = covariates and all engagement variables.
**$p < .001$.

unit increase in the absence and behavior variables was associated with respectively 51% and 49% greater odds of dropping out of school.

In Models 3 and 4, psychological/interpersonal and cognitive engagement variables were entered. More positive perceptions of school warmth were associated with a 14% reduction in the odds of dropping out, whereas boredom at school was associated with a 28% increase in the odds of dropping out. The final model correctly classified 85.8% of completers and dropouts without disabilities. In the full model, the effect of positive school warmth on the odds of dropping out disappeared, and there was a reduction in the odds associated with boredom at school (from 28% to 9%).

Discussion

School dropout remains a significant national issue. Current educational reforms, such as the National Education Goals and NCLB legislation, and the increased importance of education and technology for employment in our society indicate that school completion is perhaps more important today than ever before. This study examined the engagement of students with LD and EBD and the association of student engagement to school dropout.

In general, there were small, significant differences between students with mild disabilities and their average-achieving peers in terms of their engagement at school. Students with disabilities had less desirable engagement with school than their average-achieving peers. The largest differences—although quite small in terms of effect sizes—were in the behavioral engagement variables, particularly behavior (e.g., misbehavior, fighting) and preparation for classes (e.g., coming to class without pencil, paper, books, or completed homework).

Although the differences between students with mild disabilities and students without disabilities in terms of their engagement at school were small, the results indicated that these engagement variables were significant predictors of those students who drop out and those who stay in school *within* these groups. In the second set of analyses, the variables used as covariates (achievement test scores, grade retention, and SES) and the engagement variables were significant predictors of dropout among students with LD or EBD and students without disabilities. Similar to the results of other studies (Jimerson, Egeland, Sroufe, & Carlson, 2000; Rumberger, 1995), grade retention was a powerful predictor of dropout for all three groups of students.

Interestingly, the covariates alone correctly classified a higher percentage of students without disabilities than students with LD or EBD. Furthermore, the addition of the engagement variables did little to improve the classification of students without disabilities who dropped out versus those who stayed in school. For students with LD and EBD, however, the inclusion of the engagement variables added substantially to the prediction of dropout. Students who have significant learning, emotional, and behavioral problems at school are at very high risk for school failure and dropout. One interpretation of our results is that student engagement is most important for students who are placed at the highest risk for poor school outcomes.

Of the three types of engagement measured in this study, the classification of students in the model that included the covariates and the behavioral engagement variables was quite similar to the overall classification percentages found with the full model of covariates and all variables. Several studies have found that behavioral engagement variables, even in early elementary school, are significant predictors of later student dropout and completion (Alexander et al., 1997), are associated with achievement (Finn & Cox, 1992), and successfully differentiate students who dropped out from those who successfully completed school (Finn & Rock, 1997). However, inspection of the correlations among these variables for the students with EBD seem to indicate that there is a more sophisticated, complex relationship between these variables and school dropout and completion. A recent study found that higher quality relationships between intervention staff and elementary and middle school students were associated with improved engagement at school (e.g., attendance, work completion, preparation; Anderson, Christenson, Sinclair, & Lehr, 2004). One possibility is that the psychological/interpersonal and cognitive aspects of engagement are *indirectly* related to school completion through their effects on students' behavioral engagement.

Although student engagement was measured at the student level, it is important to note that engagement is not solely a within-student variable. Following the ecological systems work of Bronfenbrenner (1979, 1992) and Pianta and Walsh (1996), student engagement is perhaps best conceptualized as an interaction over time between the student and the systems in which the student develops. On a related point, another important distinction regarding student engagement is between indicators and facilitators of student engagement (Sinclair et al., 2003). *Indicators* of engagement reflect individual students' connections with school and learning, such as attendance and preparation for class, whereas *facilitators* of engagement are contextual variables that promote student engagement, such as parental support for learning (e.g., expectations for school completion, monitoring homework). Facilitators of engagement may also be found at the classroom, peer group, and school levels.

There were several limitations to these results. First, the data came from an extant database; therefore, the measures of engagement were limited in design and scope by what had been collected for the longitudinal study. Following the types of engagement proposed by Christenson and Anderson (2002), there was no measure of students' academic engagement in terms of time on task, and appropriate measures of students' relationships with peers and belonging were lacking. Furthermore, the school warmth scale queried students regarding their relationships with teachers in general rather than with

specific teachers. This is potentially an important distinction. Years of research have led to the conclusion that a close relationship with a competent and caring adult is the best-documented asset of resilient children (Masten & Reed, 2002). A close relationship with even one teacher or other school staff member, such as a coach, counselor, principal, or psychologist, may have a significant impact on a student's engagement and persistence with school.

Other limitations include the selection of students with disabilities and the age of the data. In terms of selecting students with disabilities by category, there was no information about how or when students were identified for special education services. There is overlap in the skill deficits and characteristics of students in the mild disability categories (MacMillian & Reschly, 1998), and criteria vary by state (e.g., Denning, Chamberlin, & Polloway, 2000; Mercer, Jordan, Allsopp, & Mercer, 1995; Reschly, 1996). Moreover, the data used in this study were somewhat dated; students who were anticipated to graduate from high school in the spring of 1992 are currently 30 or 31 years of age and have careers and families of their own. However, there are few comprehensive, nationally representative data sets like NELS; therefore, these data still provide important information regarding educational processes and student success. Furthermore, as a broad social system, change in schools is often slow, and perhaps most important, it is unlikely that the relevance of these engagement variables to school success has changed in the 13 years that have passed since these students left high school.

Despite these limitations, there were merits to this investigation. First, this study examined dropout among students with mild disabilities—a group of students who have rarely been the focus of school dropout research or interventions. More important, this study moved beyond status predictors of dropout to examine alterable, theoretically based student engagement variables. Student engagement is a compelling concept. As noted in comments by Alexander et al. (1997) and Grannis (1994) and supported by the results of this study, student engagement does appear to hold promise as the key, both theoretically and empirically, to dropout prevention and intervention.

Implications for Practice

The most exciting and important implication of this study is the clear link that exists between these results and day-to-day practice in the schools. Engagement variables are useful for the identification of students who are at risk of dropping out of school and provide a logical connection to prevention and intervention activities. School personnel who are interested in identifying students at high risk for dropout may examine school- or district-level data for individuals who are not on track to graduate on time; students with high absence rates or behavioral problems; students who were retained or who are failing; and students who show low participation in or connection to the school environment. The next step is to follow up these students with the goal of re-engaging them in school and with learning. These activities may include providing additional help with academic or personal problems; offering greater opportunities for autonomy and participation in the school environment; and creating smaller, more personal environments, such as small learning communities or "schools within a school," to facilitate interpersonal connections among students and between students and their teachers.

Although there is a dearth of empirically sound research on dropout intervention (Lehr et al., 2003; Prevatt & Kelly, 2003), there is some promising evidence for the efficacy of sustained, personalized interventions. For example, *Check & Connect* is an intervention that addresses student engagement, focusing on improving indicators of behavioral engagement (e.g., attendance, participation, behavior at school) and fostering students' psychological and cognitive engagement at school and with learning. The intervention is a structured mentoring program in which intervention staff work across systems with students, families, and school personnel. The program has been used with elementary, middle, and high school students; with students receiving special education services and others showing signs of early school withdrawal; and in suburban and urban settings. Across studies, program results have been positive; outcomes include improved attendance, behavior, and rates of school completion (see http://ici.umn.edu/checkandconnect/).

Future Directions

There are numerous avenues for future research. First, it is important to refine the measurement of student engagement. Statistically sound and theoretically comprehensive measures are needed to further investigate the significance and role of student engagement in school processes and outcomes. Moreover, it is necessary to examine the relationships among the types of student engagement and the direct and indirect effects of these variables on school dropout and completion. Finally, it is imperative that we build an empirical base of dropout prevention and intervention strategies and programs, answering the question posed by Christenson et al. (2001): What interventions are effective, for whom, and under what conditions?

Currently, few predictive studies of the engagement of students with disabilities and student dropout and completion exist in the literature. This study found that after accounting for covariates associated with dropout, student engagement variables in the eighth grade were significant predictors of which students dropped out and which of them stayed in school, particularly for those at the highest risk of poor outcomes (i.e., those with EBD and LD). As schools and districts struggle to meet the graduation rate standards set in the NCLB legislation, these results indicate that student engagement variables are useful for identifying students at risk of dropping out of school and that these variables are a logical focus for intervention efforts. ■

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NOTES

1. This is a status completion rate based solely on receipt of a standard diploma. Another 10% of students in the total population complete high school by an alternative method.
2. The Individuals with Disabilities Education Act refers to students with emotional or behavioral disorders as having an *emotional disturbance* (ED). However, different terms and acronyms are used in the literature and in various states, including *behavior disorders* (BD), *emotional/behavioral disorders* (EBD), and *serious emotional disturbance* (SED). The acronym EBD is used throughout this article.
3 Alterable variables from studies by Bryk and Thum (1989); Ekstrom, Goertz, Pollack, and Rock (1986); Hess and D'Amato (1996); Rumberger (1995); and Wehlage and Rutter (1986).
4. Unweighted raw numbers are presented for all participants, whereas percentages are weighted with the appropriate corresponding weight provided by NCES.
5. Further information regarding the calculation of weights may be found in Curtin, Ingels, Wu, and Heuer (2002).

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Effective Instruction

An Inconspicuous Strategy for Dropout Prevention

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ABSTRACT

Although researchers have clearly connected dropping out of school to prolonged low achievement, to date, effective teaching practices are largely absent from the milieu of interventions and programs that are employed by schools to address dropout prevention. As such, effective instructional design and delivery as a focus for keeping students with disabilities in school appears to be an *inconspicuous strategy* for dropout prevention. We provide an overview of dropout prevention efforts by researchers and federal, state, and local educators; a rationale for connecting effective teaching principles to the challenge of graduating students with disabilities; and a brief overview of 10 effective teaching principles and how they relate to academic success that leads to school completion. Practical strategies that teachers can use to make their instruction more effective are also included.

BETWEEN 1995–1996 AND 1999–2000, THE PERCENTage of students with disabilities dropping out of school declined from 34.1% to 29.4%. Improvement in school dropout rates took place in almost every disability category, most notably among students with speech–language impairments, specific learning disabilities, orthopedic impairments, hearing impairments, and emotional disturbance (U.S. Department of Education, 2003). Yet despite these improvements, school dropout remains one of the most serious and pervasive problems facing students with disabilities nationally.

Students with disabilities are twice as likely to drop out of school as their nondisabled peers in general education (President's Commission on Excellence in Special Education, 2002). Dropout rates among students with disabilities vary by characteristics such as ethnicity, socioeconomic status, geographic location, and type of disability. Students with emotional and behavioral disorders (51.4%) and students with learning disabilities (27.6%) experience disproportionately higher dropout rates than other students with disabilities (U.S. Department of Education, 2003).

Not only does a disproportionate percentage of students with LD drop out of school compared to the general education population, but many of these students also evidence a wide array of academic and social adjustment problems, including high rates of absenteeism, course failure, poor self-esteem, and inappropriate behaviors (Deshler et al., 2001). Furthermore, students with disabilities are at even higher risk for dropping out of school when placed in general education environments, where the specially designed instruction and supports necessary to keep up with the demands of content-area classes are often absent (Wagner & Cameto, 2004). The problems that students with disabilities face when trying to succeed in the general education classroom only exacerbate when effective instruction is not occurring in these settings. The combined effect over time leads to discouragement and disengagement from school.

High incidences of dropout among students with disabilities have placed educators at all levels under unprecedented pressure to identify reasons for dropout and to design effective interventions to reduce dropout rates. In response, schools are actively pursuing the implementation of a variety of preventive efforts, including early emphasis on reading and literacy, before- and after-school remediation programs, summer programs, increasing parental involvement, initiating mentoring and tutoring programs, alternative schools, profes-

Volume 27, Number 5, September/October 2006, Pages 301–311

sional development for teachers and staff, and funding allocations contingent on school performance. Although these programs and strategies appear beneficial, the scale of implementation remains inadequate to significantly affect dropout rates.

We offer two potential reasons for the limited impact of these programs. First, the overwhelming preponderance of literature in the area of dropout prevention for youth with disabilities consists not of original research studies, but rather of theoretical pieces, descriptions of curricula, instructional strategies, and the like (Cobb, Sample, Alwell, & Johns, 2005). Moreover, a substantial proportion of the published original research studies provides only minimal information about the description of the intervention, expected outcomes, and contexts that would enable easy translation of this research into practice. Regrettably, many schools have developed dropout prevention programs based on these theoretical pieces without establishing clear program outcomes, measurement strategies, or evaluation designs to determine the effectiveness of their efforts.

The second reason for the limited impact of dropout prevention programs may be that effective teaching practices are not incorporated into the design of the academic components of these programs. Although researchers have clearly connected dropping out of school to prolonged low achievement, and many dropout prevention programs contain academic components, to date, effective teaching practices are largely absent from the milieu of interventions and programs employed by schools to address dropout prevention. As such, effective instructional design and delivery as a focus for keeping students with disabilities in school appears to be an *inconspicuous strategy* for dropout prevention.

To make effective instruction more conspicuous as a strategy for dropout prevention, we provide in this article (a) an overview of dropout prevention efforts by researchers, educators, and policymakers; (b) a rationale for connecting effective teaching principles to the challenge of graduating students with disabilities; and (c) a brief overview of 10 effective teaching principles and their relevance for keeping students with disabilities engaged in school. These teaching principles were introduced in the technical report *Executive Summary of Research Synthesis on Effective Teaching Principles and the Design of Quality Tools for Educators* (Ellis, Worthington, & Larkin, 1994). Some practical strategies that teachers can use to make their instruction more effective are also included.

Dropout Prevention Overview

Federal and state agencies, school personnel, and researchers are making a concerted effort to reduce the number of students with disabilities who drop out of school through many different approaches and strategies. These strategies include accountability legislation and monitoring, data collection and reporting strategies, state-level initiatives, school-based programs, and research efforts.

School completion rates provide evidence of the extent to which schools engage students in the educational process and, as such, have become measures of school performance. The recent passage of the No Child Left Behind Act (NCLB) of 2001 has focused attention on the problem of dropout and has been a driving force in efforts to increase rates of school completion. Accountability measures in NCLB require schools to monitor the progress of all students using indicators of adequate yearly progress (AYP) and measures of academic performance and rates of dropout and graduation. NCLB also places emphasis on the use of scientifically validated teaching methods to improve educational outcomes for all children.

Similarly, the 1997 and 2004 amendments to the Individuals with Disabilities Education Act (IDEA) require states to establish performance goals and indicators related to student progress in the general education curriculum and to reducing dropout rates among children with disabilities. Among other requirements, states must develop performance plans, including performance goals and indicators, compare dropout and graduation rates with students in general education, analyze trend data in dropout rates, explain reasons for slippage or progress in achieving indicators, and plan future activities to decrease dropout and increase rates of school completion for students with disabilities. States are also required to annually report progress toward these goals and indicators.

The U.S. Department of Education Office of Special Education Programs (OSEP) provided funding to determine effective interventions that decrease dropout rates for students with disabilities and established the National Dropout Prevention Center for Students with Disabilities (NDPC-SD), a technical assistance and dissemination center, to synthesize and disseminate effective research and practice in dropout prevention. The NDPC-SD also provides assistance to states in implementing dropout prevention programs. Because of IDEA and NCLB requirements, school completion and dropout rates are becoming national measures of school performance and providing evidence of the extent to which schools successfully engage students in the educational process.

In addition to federal legislation and monitoring efforts, states are beginning to establish accountability systems for reducing dropout rates among students with disabilities. These efforts include public reporting of dropout data, rewards and sanctions based on dropout rates, and focused technical assistance to districts reporting high dropout rates (Abt Associates, 2004). About 20% and 28%, respectively, of middle and high school administrators reported current implementation of formal dropout prevention programs in response to these rates (Abt Associates, 2004).

Although formal dropout prevention programs are not common occurrences in most schools, many school administrators often allocate other vital resources (e.g., fiscal and

staff) to address the problem of students' dropping out of school. These additional resources support programs or initiatives to (a) develop critical early literacy skills, (b) target students who are prone to dropping out of school, (c) provide individualized tutoring and support, (d) improve school attendance, (e) increase community-based work experiences and career and technical education programs, and (f) monitor indicators of risk to guide interventions (Abt Associates, 2004; Blackorby & Wagner, 1996).

Expanding on the efforts undertaken by federal, state, and local education agencies, researchers are refocusing their work from identifying causal and predictive factors associated with high dropout rates to identifying approaches and strategies for the design and implementation of effective dropout prevention programs. Whereas the research on dropout rates among students with disabilities is still emerging (Dunn, Chambers, & Rabren, 2004; Grayson, 1998), five general conclusions from the literature on dropout rates and students with disabilities may help the development of effective dropout prevention programs:

Conclusion 1

Students with disabilities drop out of school for a variety of reasons. To explain why students with disabilities drop out of school, researchers cite numerous reasons, such as high absenteeism; poor academic performance, poor grades, course failure, and retention; high-stakes testing requirements; behavior problems leading to excessive discipline problems, suspension, and sometimes expulsion; poor teaching and apathetic teachers; low expectations; and social isolation (Abt Associates, 2004; Finn, 1993; Martin, Tobin, & Sugai, 2002; Thurlow, Sinclair, & Johnson, 2002; Wagner, Blackorby, & Hebbeler, 1993). Understanding factors that explain why students with disabilities drop out of school may provide useful insight into developing more effective prevention programs and strategies.

Conclusion 2

Dropping out is a multifaceted process with direct links to disengagement from school and not a single impulsive action. Complex interrelationships exist between factors associated with dropout in the context of home, school, community, and the student (Christenson, Sinclair, Lehr, & Hurley, 2000). For example, as early as in the elementary grades, many students who eventually drop out of school begin to express characteristics (e.g., stomach aches, absences, behavior problems, low reading skills) that are symptomatic of dropping out in later years. McPartland (1994) identified opportunities for success in schoolwork, a caring and supportive environment, clear communication of the relevance of education to future endeavors, and addressing students' personal problems as four broad intervention components essential to school engagement. Thurlow et al. (2002) went further, identifying a multidimensional construct for engagement involving four components with associated indicators influenced by school, home, and peers. These four components are as follows:

1. academic engagement, including on-task behavior, active participation in course activities, and passing grades;
2. psychological engagement, indicating identification with the school and fitting into the school environment;
3. cognitive engagement to allow information processing, self-determination, and effective problem solving; and
4. behavioral engagement related to regular school attendance and appropriate social interactions.

Conclusion 3

Factors associated with dropping out of school are numerous, and some are not amenable to interventions targeted to decrease dropout and increase school completion rates. Early school failure begins the downward cycle leading children to question their competence, to lose self-esteem, to weaken their attachment to school, and, inevitably, to drop out of school in later years (U.S. Government Accounting Office, 2002). A focus on effectively altering variables to increase school engagement would not only prevent dropout but could increase successful school completion as well (Dunn, Chambers, & Rabren, 2004; Lehr, Hansen, Sinclair, & Christenson, 2001). Thurlow et al. (2002) categorized variables related to high dropout rates into status variables and alterable variables. *Status variables* are stable and refer to demographic factors related to gender, family dynamics, ethnicity, socioeconomic status, disability, school size and type, and mobility. *Alterable variables* are amenable to intervention and refer to factors related to absenteeism, academic performance, behavior, school climate, parental involvement, school policies, attitudes, persistence/resilience, and the quality of instruction and academic engagement. Recognizing the difference between alterable and status variables is important when designing and implementing dropout prevention interventions for students with disabilities. Prevention efforts and ideas based on understanding these factors are most likely to be successful.

Conclusion 4

Dropout issues must be considered in the context of other educational reforms (e.g., accountability, high academic standards, school restructuring) and not as an iso-

lated, appended program. Dynarski and Gleason (1999) reviewed five multimillion-dollar restructuring efforts that were part of federal dropout prevention initiatives and reported three main conclusions. First, there was little consensus on the root causes of dropout within the schools, particularly as related to school factors such as teacher attitudes and behavior, grading and discipline practices, quality of instruction, and teacher turnover.

Second, administrators restructuring schools found it easier to add dropout prevention services, such as monitoring risk factors, counseling, and mentoring programs, rather than changing teaching and learning practices. However, some schools were able to change teaching and learning practices, but these changes were often fragile and easily undone by a change in school leadership.

The third and most significant conclusion of the report was that restructuring efforts that were not aligned with other school improvement strategies ultimately had no significant impact on the reduction of the number of students who dropped out of school. The conclusions of Dynarski and Gleason's (1999) analysis suggest that effective dropout prevention cannot occur in a vacuum but must be carefully viewed within the context of a major school reform activity, and school leadership plays a pivotal role in the success of initial and sustained dropout prevention efforts.

Conclusion 5

Attending to student perspectives about dropping out provides additional information to strengthen programs designed to help students with disabilities stay in school and graduate. Students with disabilities have identified various reasons for dropping out of school or pursuing alternative education options (Guterman, 1995; Kortering & Braziel, 1999; Lichtenstein, 1993). Commonly identified reasons included boring and irrelevant content, poor relationships with teachers and peers, lack of a sense of belonging, lack of personal effort, and attendance and discipline policies and practices that contributed to frequent discipline referrals and suspensions. Furthermore, students reported fear of personal safety, need to work to provide family support, and poor academic performance as other reasons for dropping out. Clearly, many of these variables directly contribute to a student's feelings of disengagement; therefore, these variables will provide insight into students' perceptions of school and the factors leading to a student's total disengagement from the school system.

Overall, these conclusions emphasize the role of school engagement in designing dropout prevention programs. These conclusions have implications for developing student-focused dropout prevention strategies to include effective transition planning (e.g., student preferences, interests, and future goals), offering relevant courses, planning and delivering instruction, and creating school practices and policies to keep students with disabilities engaged in school.

Effective Teaching Principles and School Completion

Since the early 1980s, educators have learned a great deal about the attributes of instruction that result in efficient and motivated learning. These attributes are supported by solid research evidence and have received wide dissemination through various outlets. Yet in many classrooms, effective teaching practices are not routinely used, leading to academic failure and ultimately disengaged and disinterested students who drop out of school. As a strategic intervention, the following considerations support the value of including principles of effective instruction as an integral component of dropout prevention programs. These considerations are derived from a broader reflection on the impact of research-validated practices on service delivery for students with disabilities, especially students with learning disabilities (LD) and emotional or behavioral disorders (EBD).

Consideration 1

Foundational models of effective school learning provide a conceptual framework linking effective instruction to dropout prevention. Carroll (1963) proposed a model of school learning that continues to serve as a guide for the importance of designing high-quality instructional strategies for all students, especially students with diverse needs. The model includes three factors related to the school learning process for students: (a) characteristics inherent in the learner, (b) time allocated for learning, and (c) quality of instruction. These guiding principles are foundational to effective instruction.

Carroll's (1963) model allows us to draw several strong parallels between school learning and problems associated with students with disabilities who drop out of school. For example, in today's description of students who drop out of school, the component of *characteristics inherent in the learner* corresponds to status variables. The components of *time allocated for learning* and *quality of instruction* are variables that are alterable within the classroom (Rosenthal, 1998; Rumberger, 1995). Status variables are valuable for identifying children who may or may not be at risk of dropping out of school and for providing contextual information for learning tasks. However, from an educator's perspective, status variables for the most part are difficult or unlikely to change. In other words, status variables have limited usefulness in the design of interventions or programs for reducing the rate at which students with disabilities drop out of school.

Conversely, alterable variables not only include allocated time and quality of the instructional time, but also grades, disruptive behavior, absenteeism rates, school policies, school climate, parental involvement, sense of belonging, attitudes toward school, and educational support in the home. These variables are critical to the design and imple-

mentation of services and programs targeting students with disabilities who drop out of school, because educators, for the most part, have the ability to change or influence these variables using effective interventions and practices.

Consideration 2

Students with LD and EBD typically have trouble with national measures of academic performance and need effective interventions to improve academic outcomes. It is no longer arguable that youth with LD and EBD typically exhibit substantial deficits in reading, mathematics, written expression, and executive functioning. For example, youth with LD experience early problems with reading, such as identifying important information in text materials, remembering facts and details, clarifying, interpreting, making inferences, and summarizing information (Vaughn, Bos, & Schumm, 2003). Many students with LD also experience difficulties in mathematics (e.g., understanding and solving word problems, math concepts, and computational skills). Students with EBD also experience academic difficulties in school. On average, the reading and mathematics abilities of students with EBD are closer to grade level than those of students with LD, but students with EBD are more likely to receive low grades because of interfering behaviors (Wagner & Cameto, 2004).

Many of these students need intensive and systematic instruction to address the challenges posed by the severity of their learning needs. When students with LD and EBD receive services in general education classrooms, where the expectation for academic progress is to keep up with other students in the class, most do not keep up, and they often perform poorly on high-stakes accountability tests under NCLB. Advances in research on effective teaching practices for students with LD and EBD have greatly increased our ability to improve the educational outcomes for these students. Results culled from this research indicate that when students receive explicit instruction using effective methods, their academic performance improves significantly (deBettencourt, 2003). Because a student's sense of alienation and disengagement from school often precedes unsuccessful school experiences (e.g., failing grades, course failure and retention, excessive absences, and behavior problems), effective instructional practices are critical in the design and delivery of dropout prevention programs.

Consideration 3

The use of research-validated practices as a foundation for effective teaching is essential to the success of the education system in the 21st century. One of the most important suggestions for teachers to enhance the likelihood that students will succeed academically and socially is to learn about and then implement research-validated instructional practices (Miller, 2002). Advances in educational research over the past few decades have clearly highlighted more about effective instructional practices (e.g., math, reading, strategy instruction, and behavior) than ever before. Research in special education (e.g., with students with LD and EBD) has contributed substantially to the knowledge base on effective educational practices (Gage, 1997; Swanson & Hoskyn, 1998). Research syntheses (Gersten, Williams, Fuchs, & Baker, 2001; Sugai & Horner, 2002; Mastropieri, Scruggs, Bakken, & Whedon, 1996) and meta-analyses (Swanson & Hoskyn, 1998) have confirmed a consistent knowledge base that can generalize across student, teacher, content-area, and environmental contexts. Consequently, teachers have the opportunity to implement research-validated practices rather than relying on their own intuitive judgments about what works and what does not work. Statistical and social significance are considerations in determining what constitutes research-validated practices. Social significance relates to such questions as the extent to which these practices will enable students to perform on age- and grade-level tasks and how they perceive themselves and how others perceive them (Deshler, 2004).

Principles of Effective Instruction and School Engagement

The degree to which information or skills are organized and presented so that students can easily learn them and the degree to which students are given enough time to learn the materials being taught are crucial variables in the delivery of effective instruction. For our purposes, we will summarize 10 effective teaching principles from a technical report on generally effective instructional principles (Ellis et al., 1994) and their relevance for keeping students with disabilities engaged in school.

Principle 1: Active Engagement

Active engagement (i.e., time on task) refers to the amount of time students and teachers attend to work that is diagnostically and instructionally appropriate. Students learn more when they are actively engaged during an instructional task. Disengagement—a long and complicated process, beginning early with students missing school and experiencing academic and behavioral difficulties—is a reason often identified by students with disabilities for dropping out of school (Rumberger, 1995). To decrease disengagement, the amount of time students are actively engaged in relevant instructional tasks must increase. Teachers can increase the amount of time students are appropriately engaged in instructional tasks through (a) effective design and delivery of lessons, (b) selection of interesting materials that are culturally relevant and appropriate to the students' instructional levels, (c) offering a variety of opportunities for appropriate student responses,

and (d) reinforcing class participation (Mastropieri & Scruggs, 2004).

Principle 2: Providing the Experience of Success

High and moderate success rates are correlated positively with student learning outcomes, and low success rates are correlated negatively with student learning outcomes. Simply engaging students in social and academic activities is not sufficient; students must experience success early and often while they are engaged in school activities—especially academic tasks. Teachers must create an instructional environment to actively engage students and to encourage successful social and academic experiences.

Teachers must also carefully consider the content match between students' level of achievement and task assignment. This match is crucial for students to experience academic success. The connection between students' success rate and students' dropping out of school is readily apparent. If students do not experience success but repeatedly fail, their motivation quickly dissipates, leaving them with feelings of inadequacy and an inability to see the relevance of school. The lack of successful experiences often ends with the student dropping out of school.

Principle 3: Content Coverage and Opportunity to Learn

Increased opportunity to learn content correlates positively with increased student achievement. Therefore, the more content is covered, the greater the potential for student learning. Absenteeism is a common characteristic of students with disabilities who drop out of school. If students do not attend classes, their opportunity to learn is greatly reduced, thereby resulting in lower achievement. If teachers do not provide an engaging environment that fosters feelings of success in academic and social situations, students are likely to become disinterested and avoid school altogether. Not only is content coverage important, but the manner in which the teacher delivers instruction is also an important factor that directly influences student achievement.

Principle 4: Grouping for Instruction

Students achieve best in classes in which they spend most of their time engaged in learning activities supervised directly by their teacher. Grouping can facilitate a teacher's ability to keep students engaged in the classroom. There are several different arrangements for teachers to place students into groups (e.g., whole class, small group, one to one); each has its distinct advantages. For example, whole-group arrangements engage all students in shared learning experiences, whereas small homogeneous groups allow teachers to meet individual student needs and increase opportunities for students to respond. Moreover, teachers can provide more individualized feedback and adjust instructional pacing to ensure mastery (Vaughn, Bos, & Schumm, 2003). Grouping of students has both positive and negative effects on student engagement, resulting in increased or decreased levels of academic progress (Maheady, 1997). Whether through grouping or additional support, when a student's academic success is increased, the likely result is a student who stays in school.

Principle 5: Scaffolded Instruction

Students can become independent, self-regulated learners through carefully scaffolded instruction. Students with disabilities require a supportive learning environment to experience success. Scaffolded instruction must be a part of the supportive learning environment because it helps students use their strengths and compensate for their weaknesses. Scaffolded instruction is not one thing that a teacher does, but rather a carefully and systematically sequenced series of prompted content, materials, tasks, and teacher support (Dickson, Chard, & Simmons, 1993). It is a system of instructional support that is deliberately designed by a teacher to assist students with disabilities in becoming independent and self-regulated learners, hence enabling them to become more successful in school and successful adults.

Principle 6: Addressing Forms of Knowledge

Teachers should address all forms of knowledge at one point during instruction. The critical forms of knowledge associated with strategic learning are

1. declarative knowledge: basic facts and vocabulary;
2. procedural knowledge: steps used to solve problems; and
3. conditional knowledge: when and where to use certain strategies (Ellis et al., 1994).

The field of special education has received criticism for the overemphasis placed on declarative and procedural knowledge. Often, students with disabilities experience placements in instructional environments that focus solely on the remediation of basic skills. In these environments, students quickly lose sight of the relevance and importance of school after experiencing the same seemingly irrelevant content and low expectations year after year, and they eventually choose not to participate. When students no longer see the relevance of their academic learning to their daily lives outside of school, they become disengaged and drop out of school. When teachers can find a balance in their instructional emphasis, students are more likely to see the relevance and choose to participate.

Principle 7: Organizing and Activating Knowledge

Not only is the content that teachers emphasize important, but the structure information during the instructional episode is also critical to student success. Carefully combining what the learner already knows and understands with new information increases the understanding and application of new information. Students will learn more if the teacher carefully builds simpler skills, such as facts, into more complex knowledge, such as rule relationships. This progression from easier skills to more difficult skills is crucial for the development of the foundational skills and knowledge required to progress to more complex concepts. Moreover, student learning increases when the teacher presents information in a manner that helps the students to organize, store, and retrieve knowledge. A large knowledge base supports many different strategies to increase students' ability to organize, store, and retrieve information (Mastropieri & Scruggs, 2002, 2004). Students with disabilities experience great difficulty with storing and retrieving information. Obviously, students who cannot retrieve information efficiently are destined to fail not only in school but also in postschool employment opportunities. When students do poorly in school, they are more likely to feel disconnected and leave.

Principle 8: Teaching Strategically

Teachers can help students become more independent, self-regulated learners through strategic instruction. Teaching strategically relates more to teaching students "how to learn" effectively than to "what content to teach." This often involves teaching students a strategy to learn. A *strategy* is an approach an individual takes to complete a task. Strategies involve the process of how a person thinks and acts when completing any given task. Although expert learners are able to control, monitor, and use effective strategies, students with disabilities often lack these "how to learn" strategies (Carnine, Silbert, Kame'enui, & Tarver, 2004). Students must be directly taught "how to learn" strategies by teachers before, during, and after instruction. In some cases, students will require practice using the strategy with support from the teacher. When students are taught strategies that can be applied across various settings and situations, students will have a greater likelihood of succeeding in the numerous and varied situations they encounter throughout the school day.

Principle 9: Making Instruction Explicit

Teaching is most effective when teachers present information in a systematic and explicit manner to help students become independent and self-regulated learners. Educators and researchers have learned a great deal about the attributes of instruction that results in increased student learning. Explicit instruction is teacher-directed instruction that is highly organized, task oriented, and presented in a clear, direct manner to promote student understanding. Teachers can make their instruction explicit by (a) clearly stating the goals and objectives of the lesson, (b) structuring the lesson in an obvious format, and (c) presenting content in a direct and clear fashion. The explicitness of instruction is crucial for students who struggle with learning, especially students with disabilities. Students with disabilities are often disorganized thinkers who do not to make sense of generalizations and observations by themselves. The teacher must introduce the new skills and concepts directly and explicitly to prevent students from drawing incorrect conclusions, which are then difficult to correct. Explicit instruction is the most efficient and effective method for teaching students with disabilities.

Principle 10: Teaching Sameness

By teaching sameness, both within and across subjects, teachers promote the ability of students to access potentially relevant knowledge in novel problem-solving situations. For many students with disabilities, the seemingly endless amount of isolated facts and information presented to them during school becomes overwhelming. Teachers must purposely design instruction to help students recognize patterns and organize knowledge. When teachers help students make relevant connections and link information, it helps students acquire knowledge in a more effective and efficient fashion. Kame'enui (1991) described two reasons for teaching sameness: (a) teachers can teach more content in less time, and (b) structural sameness allows teachers to help students acquire essential building blocks for the development of more complex cognitive structures. If teachers can teach more content in less time and do it more effectively, students' academic performance is likely to improve.

These 10 principles of effective instruction are research-validated practices that, when systematically and consistently implemented, are capable of helping students with disabilities experience school success and make academic gains in the general education curriculum. Because academic failure is a primary reason for school dropout, making effective instruction a *conspicuous* strategy to increase the academic engagement that leads to school completion is beneficial. Some practical strategies that teachers can use to make their instruction more effective are included in the Appendix.

Conclusion

Legislators, educators, and researchers recognize the seriousness and pervasiveness of the school dropout dilemma and have planned, financed, and implemented a rather extensive set of policies, accountability mandates, strategies, and focused monitoring procedures—all intended to increase the likelihood that students with disabilities will not only stay in school but graduate with a diploma. Yet the dropout rates for

students with disabilities have shown minimal improvements over the past decade. The urgency of this problem has initiated a series of legislative acts, including the Elementary and Secondary Education Act, or No Child Left Behind Act of 2001. These legislative acts are holding school systems accountable for the number of students that do not succeed and focus attention on the dropout problem, forcing schools to initiate programs targeting students who are at risk for dropping out of school—specifically, students with disabilities. This article provides a sound rationale for applying effective teaching practices to the task of decreasing school dropout rates and helping students with disabilities to graduate. We offer the following implications for practice and future directions for research.

Implications for Practice

Evidence from studies examining effective teaching principles indicates that effective instructional practices incorporated across grade levels and content areas can facilitate academic success for students of varying ages, abilities, and cultural backgrounds, including students with disabilities (Adams & Engelmann, 1996; Ellis et al., 1994; National Institutes of Child Health and Human Development, 2000; Rosenshine & Stevens, 1986). With approximately 51% and 27%, respectively, of students with EBD and LD dropping out of school, and even more who fail to make proficient scores on high-stakes tests, the lack of academic success of students with disabilities is one of the most serious and pervasive problems facing society.

Often, state- and school-initiated programs to prevent dropout are not aggressively focusing attention on either systemic efforts to remediate academic failure or students with disabilities. Rather unfortunately, the programs and strategies implemented in schools generally focus on social, behavioral, and psychological interventions designed to "fix" students and often do not include students with disabilities. As such, these efforts do not significantly increase school completion rates. Because of the high dropout rates and the legislative mandates (NCLB and IDEA) holding school systems accountable for the number of students that do not succeed, schools must focus attention on increasing academic performance and school completion for *all* students.

Clearly, students with disabilities are at much higher risk of dropping out of school than students without disabilities and must be intentionally included in schoolwide efforts to increase school completion rates. Given the extant literature base on effective instruction, policymakers, educators, and researchers must begin to examine classroom instructional design and delivery as a strategy that is directly related to students with disabilities dropping out of school. The instructional decisions (what and how to teach) have a major impact on student achievement (i.e., learning) and ultimately influence the long-term outcomes of students with disabilities (i.e., graduation).

Implications for Research

Primarily, there is a need to improve the quality of dropout prevention research in general. The majority of publications found in the literature in the field of dropout prevention for youth with disabilities are not original research studies, but rather theoretical pieces, descriptions of curricula, and instructional strategies. Even a substantial proportion of the published studies that are indeed original research provide only minimal information and description of the intervention, expected outcomes, and contexts that would enable easy translation of this research into practice. Future researchers must provide descriptions of their interventions that are complete enough to allow other researchers and practitioners to replicate those interventions that are deemed effective.

Although researchers have clearly connected dropping out of school to prolonged low achievement, research to date has not examined the effects of using effective instructional practices as a measure to reduce dropout rates among students with disabilities in controlled studies. Researchers are just beginning to shift their efforts from elucidating the many variables associated with dropout prevention to focusing on designing and testing model programs to address the alterable variables associated with dropping out of school. As these efforts continue, dropout prevention programs with academic components will benefit from the use of these effective teaching principles in both content-area classes and tutoring.

Although numerous citations exist in the dropout prevention literature, research that would meet the "gold standard" has been extremely limited. Efforts to amass a working body of knowledge based on scientific rigor sufficient to assist educators in addressing high dropout rates are still emerging. To add effectively to this body of knowledge, researchers must overcome a number of methodological concerns identified in recent synthesis work in dropout prevention (Cobb et al., 2005).

Dropout as an outcome is an extremely difficult variable to operationalize with reliability and validity. Cobb et al. (2005) recommended that measuring school engagement is a more promising strategy. Measuring behavioral, emotional, and cognitive engagement variables has both philosophical and psychometric advantages over measuring dropout variables in the conduct of dropout prevention (or resiliency) research. However, much work is yet to be done to fully understand this construct and its various facets; it is a powerful and important outcome for interventionists in dropout prevention research.

Preventing students with disabilities from dropping out of school is an enormous challenge with high stakes and extraordinary benefits for all when effective instructional strategies are implemented. Instruction is the essential element in the classroom that is completely controlled by the teacher. We cannot change what students learned last year, where students come from, or what the students do when they leave the classroom. However, we can focus on designing and

delivering instruction that is more effective. The principles of effective instruction are a set of tools that are already available to increase positive educational outcomes for students with disabilities. We need to use them. ■

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Appendix: Strategies to Increase Academic Engagement and Make Instruction More Effective

1. Increase academic engagement time by
   (a) using instructional time efficiently, monitoring the rates of engagement of your students, avoid dead time by having materials ready and close at hand, and starting instruction on time;
   (b) speeding up transitions from one activity to another by establishing classroom routines, analyzing tasks and modeling appropriate methods of shifting between locations and activities, providing directed practice in activity and location changes, and using signals to cue transitions;
   (c) using pace and enthusiasm to maintain attention and elicit student participation. Ways to show enthusiasm involve a touch of the "ham" in all of us and can include humor and animation.
2. Provide opportunities for students to learn and be successful by
   (a) maintaining a comfortable and welcoming classroom environment (i.e., positive remarks, praise of student performance, students on task, students engaged in learning) to help motivate students to attend school regularly;
   (b) providing culturally diverse students with equal opportunities to participate and perceive learning as an important shared experience among instructor and students;
   (c) planning educational activities and using materials that reflect positive representations of various cultures and persons with and without disabilities;
   (d) spending instructional time teaching students what they need to learn and be able to do;
   (e) providing frequent reinforcement of correct responses and appropriate behavior, including (i) directed content-related praise; (ii) generalized reinforcers, such as tokens, points, and checkmarks; and (iii) activity reinforcers, such as computer time, library time, and free time;
   (f) using a variety of curriculum-based assessment measures to frequently monitor student progress and make instructional adjustments;
   (g) providing multiple means of engagement and multiple methods of expression to provide students with a variety of alternatives for demonstrating what they know, including the use of technology and flexible digital media.
3. Increase opportunities for student learning by
   (a) providing opportunities for all students to participate in instructional activities by asking a variety of randomly sequenced questions, requiring both unison and individual responses;
   (b) orienting students to the classroom procedure for responding to individual questions (e.g., ask the question, have students raise their hands, give think time, and call on a student);
   (c) eliciting frequent student responses to verify understanding, maintain attention, provide rehearsal and practice, and increase opportunities for learning; using signals to dissuade students from blurting out the answer;
   (d) using group or unison responding, peer-mediated or cooperative learning strategies, or response cards, to increase the number of opportunities that students have to respond.

(Appendix continues)

(Appendix continued)

4. Increase content coverage by
   (a) preteaching critical or potentially complicated vocabulary and teaching strategies for remembering words and their meanings;
   (b) providing short, explicit learning sessions with structured short pauses during lessons, varying types of learning tasks, reducing distractions, and breaking down complex tasks or concepts into smaller tasks.
5. Make instruction more explicit by developing a sequential structure for your lessons that includes an introduction to the lesson; instruction on basic facts, rule relationships, or concepts to be learned; and a review of pertinent information at the end of the lesson. The following suggestions can be used:
   (a) Gain students' attention and announce the intended goals for the lesson; give a brief review of previous, related lessons to refresh students' background knowledge; provide a statement of relevance for learning the information; and ask students for additional ways the information may be useful to learn.
   (b) Tell students your expectations for learning during the lesson. Determine and announce rules for behavior during discussions and presentations. Provide reminder cues as needed, without nagging or disrupting the flow of the lesson.
   (c) Review or reteach prerequisite skills before presenting new information.
   (d) Provide simple, clear directions; model each step; use clear, consistent language to verbalize your thinking process; ask clarifying questions to keep students on task; check for understanding; and verify knowledge. Repeat the model demonstration at least twice.
   (e) Use scaffolds to provide guided practice and gradually reduce teacher help as students exhibit more independent responses.
   (f) Use clear, recognizable examples and nonexamples; give multiple opportunities for guided practice and independent practice.
   (g) Review critical information presented in the lesson by summarizing big ideas. Encourage students to participate in the summary by asking guiding questions to elicit student responding and strengthen memory of key concepts in the lesson. Reviewing the lesson also serves as a transition cue for the next lesson or activity.
   (h) Remember that homework is another opportunity for independent practice to reinforce student learning. Assign homework only on information that has already been taught. Ensure reasonable opportunities for students to be successful, and review homework and provide feedback in a timely manner.
   (i) Preview the next lesson related to the content.
6. Teach strategically by
   (a) teaching students to use strategies that build critical thinking, decision-making skills, and problem-solving skills;
   (b) identifying "big ideas" for your courses, units, and lessons to help students attend to (what to look for) and understand (relevance) basic facts, rule relationships, and major concepts of materials they are expected to learn;
   (c) beginning units with big ideas; referring to the big ideas in each lesson; pointing out that materials reveal the big ideas; and having students uncover the big ideas in materials, reviewing big ideas at the close of each lesson.

Note. Sources: Ellis, Worthington, and Larkin (1994); Mastropieri and Scruggs (2004); Mercer and Mercer (2001).

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When and Why Dropouts Leave High School

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Teens may leave school because of academic failure, disciplinary problems, or employment opportunities. In this article, the authors test whether the reasons dropouts leave school differ by grade level and age. We compare dropout rates and reasons across grade levels and ages for all high school students, ethnic groups, and gender groups. Across all students, ninth graders have the highest dropout rate: This pattern persists for Blacks, Latinos, and Native Americans, and for male students. Dropout reasons vary by age, grade, ethnicity, and gender as well. Ninth graders and students aged 16 and younger are more likely than advanced and older students to leave school for disciplinary reasons. Older male students are more likely than younger males to leave school for employment. The significant variation in dropout rates and reasons by grade level and age indicates that multiple dropout processes may influence teens to leave school.

Keywords: *dropout rates and reasons; race and dropping out; gender and dropping out*

Throughout adolescence, teens make many important decisions, not least of which is the decision whether to persist with formal education. While making these decisions, high school students face forces such as disciplinary policies, employment opportunities, and family responsibilities that may push or pull them out of school. In many ways, the decision to stay in school

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is outstanding in its importance, as dropping out has both public and private costs.[1] In an economy where education strongly influences pay and occupation, high school dropouts hold a disadvantaged position. They are less likely to participate in the labor force than other adults, and they often become mired in low-wage jobs with few advancement opportunities (Rumberger, 1987). Dropouts have poorer mental and physical health and an increased probability of being incarcerated for committing criminal acts or of becoming dependent on government programs (Grossman & Kaestner, 1997; Rumberger, 1987; Witte, 1997). All these consequences translate into high social costs in the form of costs for incarceration, income transfer programs, and foregone tax income. Those who drop out of school early are less likely than older dropouts ever to receive a GED (Murnane, Willet, & Tyler, 1999). Thus, the social costs for early dropouts are higher than for later dropouts.

Previous research on high school dropouts has not explicitly examined how the process of dropping out of high school varies for ethnic and gender groups (see Glennie & Stearns, 2002, for an exception) or how this process varies by age or grade in school (see Goldschmidt & Wang, 1999, for a comparison of early and late dropouts). Because of societal expectations and physical and social maturation, out-of-school forces, such as employment opportunities, will operate differently on a ninth-grade student than on a high school senior, independent of ethnicity and gender. Ethnicity and gender then combine with age and grade to influence a complex process of withdrawal from formal education.

Newly available data on North Carolina's public school children offer us an unprecedented opportunity to examine the timing of and stated reasons for decisions to drop out of school. We examine two aspects of the dropout process: (a) whether reasons for dropping out vary across different grade levels in high school and across age groups and (b) whether ethnic and gender groups' reasons for dropping out vary across different grade levels and across age groups. Throughout the article, we use a developmental perspective to examine the relations among the ethnicity, gender, grade level and age of a student, and the reasons schools record for why dropouts leave school. The data we use include information about every public school student in the state of North Carolina, ensuring a large sample size from which we can create ethnic and gender groups for extended comparisons and analyses.

We find significant differences in the dropout patterns by gender and ethnicity in the North Carolina public school system. Boys are more likely to drop out of the ninth grade than of subsequent grades, whereas girls have relatively constant dropout rates in the 9th, 10th, and 11th grades that fall off sharply in the 12th grade. Although every ethnic group has its highest dropout rate in 9th grade and its lowest dropout rate in the 12th grade, this pattern is most pronounced for ethnic minorities. Furthermore, as the developmental perspective would predict, we find significant variation by grade level, age, gender, and ethnicity in the reasons that adolescents leave school, with older students and those in more advanced grades less likely to leave for disciplinary reasons and more likely to leave for academic and employment reasons.

Why Dropouts Leave School

Dropouts may leave school because of a variety of individual and school-based factors. A number of theories have been advanced to explain the reasons students leave school. "Pull-out" theories assume that students make a cost-benefit analysis of their economic interest to remain in or leave school (McNeal, 1997; Mihalic & Elliott, 1997). These theories view the adolescent in a contextual sense, in that schooling is only one important part of the adolescent's life, along with family, the labor market, peers, and churches and other organizations. Out-of-school employment or family responsibilities, for example, might serve to pull these adolescents out of school.

According to pull-out theorists, in the context of a low unemployment rate, students are more likely to leave school because their likelihood of finding employment is high. In 2001, the Bureau of Labor Statistics projected that most new jobs were expected to arise in occupations that only require work-related training, as opposed to postsecondary degrees (Hecker, 2001). Furthermore, the youth labor force (aged 16 to 24) would grow more rapidly than the overall labor force from 2000 to 2010 (Fullerton & Toosi, 2001). These kinds of jobs may be more attractive to teens than to older workers. The perceived opportunity cost for staying in school is high as well because they are forgoing present earning potential to stay in school. Pull-out theories also focus on family responsibilities, including family formation and care of siblings and elders, which may have a greater influence on female students and students of color.

In contrast, factors internal to the school, such as disciplinary policies or conflicts with students or teachers, might serve to push students out of school. "Push-out" theories concentrate on the school factors that discourage students from continuing with their education. Push-out theorists argue that students leave school not only because of their individual attributes but also because of school structure (Fine, 1986, 1991). Jordan, Lara, and McPartland (1996) define push effects as "factors located within the school itself that negatively impact the connection adolescents make with the

school's environment and cause them to reject the context of schooling." These factors can be "structural, contextual, climate-related, or individualized" (p. 64) and can influence certain students to view school as an unwelcoming place. For instance, school policies that dictate suspensions and expulsions for students who miss certain numbers of days and then push the student out of school are one notable example.

The influence of these push-out factors and pull-out factors may depend in part on the ethnicity and/or gender of the students. For example, female students may be more expected to drop out to care for family, whereas male students may also be more likely to be pushed out of school by disciplinary problems (Jordan et al., 1996). We consider these possibilities in the next section.

Dropping Out and the Transition to Adulthood

As Erikson (1963) asserts, adolescence is a time of tremendous transition, but few studies have explicitly examined how the reasons for dropping out change during adolescence.[2] Teens undergo physical and emotional changes while adopting and shedding various social roles as they move from dependence to autonomy. While they are gradually becoming adults, they are neither fully dependent on their parents nor completely autonomous (Buchmann, 1989; Rosow, 1985). Even the meanings and expectations of given roles change during this time. Teens are still sons and daughters, but the meaning of that role for a 16-year-old is vastly different from that of a 6-year-old. Adolescents may choose their own friends, recreational activities, and part-time jobs, but most are economically dependent and legally prevented from making certain adult decisions.

A key part of these transitions is the challenge of establishing an identity (Erikson, 1963). As Erikson points out, adolescents face "the question of how to connect the roles and skills cultivated earlier with the occupational prototypes of the day" (p. 261). In essence, adolescents are attempting to integrate what they already know of themselves with three things: their abilities, physical changes, and "the opportunities offered in social roles" (p. 261). Although Erikson does not mention the impact of gender and racial identities on development in his original work, we expect that social roles offered will differ by teens' sex and racial identities. For instance, a role of parent may be more socially acceptable for teen girls than for teen boys. Throughout the transition to adulthood, teens fight against role confusion, as various social roles—for example, that of student and of worker—may have conflicting demands that then may result in role confusion.

In addition, for many youth of racial minority groups, their process of identity formation may be compounded by the appearance of many mainstream institutions to be primarily White. Thus, adherence to a normative sequence for major events in the transition to adulthood may be stigmatized as a White process. Likewise, adherence to a set of behavioral norms from a White institution such as formal education may also be devalued. For instance, Fordham and Ogbu (1986) and others (Suskind, 1999) discuss the burden of "acting White" among academically gifted African American students, although recent caveats have pointed to the conditions that must be present for this social process to occur (Horvat & Lewis, 2003; Tyson, Darity, & Castellino, 2003). There is also some evidence that this difficulty in adhering to norms might extend to behavioral norms regarding coming to class prepared and cutting class for some ethnic groups (Blau, 2003), although this research also suggests that these behaviors are influenced by context as well as by individual propensities. Nevertheless, the development of racial and gender identities add complexity to the developmental process Erikson originally described. Thus, we might expect that dropout rates and reasons will vary by both grade and age as teens undergo various transitions to adulthood.

Dropout Reasons and Age

Although the physical, social, and emotional changes during adolescence have a gradual onset and teens can take multiple pathways to adulthood, legal and institutional requirements lead to some standardization in the timing of transition markers. Children can work in family farms at any age. At age 14, North Carolinians can work in nonhazardous jobs during restricted hours. At age 16, they can work in nonhazardous jobs at any time for any number of hours (North Carolina Department of Labor, 2003). In addition, at age 16, teens can obtain a driver's license, which may dramatically increase their independence from their parents. They can marry, provided that their parents give consent (Legal Information Institute, 1999). By the age of 18, teens are fully legally emancipated from their parents. They can hold any job and marry without parental consent.

Thus, our first hypothesis is that pull-out factors, particularly employment, have a greater influence on older, more advanced students. Older teens have more options for leaving school for work or marriage and may be called on more frequently to contribute both paid and unpaid work for the family's well-being.

Previous research on push-out factors, particularly disciplinary problems, has indicated the extent to which they are aimed at students in the earlier

grades of high school (Fine, 1991). By the 1990s, most American schools had implemented "zero tolerance" policies, which mandate predetermined consequences for specific offenses, such as drug and alcohol use. (National Center for Education Statistics, 1998b). Such policies may have a stronger impact on students who are repeatedly suspended at young ages. Furthermore, schools may want to suspend or expel students with problematic behavior as early as possible by getting rid of troublesome students rather than changing the school environment to reduce discipline problems (Fine, 1991; Slee, 1986). Thus, our second hypothesis concerns the concentration of push-out reasons for dropping out among younger, less advanced students. We hypothesize that push-out factors, particularly disciplinary problems, will have a greater influence on younger, less advanced students and will then decline as students age.

Dropout Reasons, Gender, and Ethnicity

The events in the transition to adulthood will influence teens differently, depending on their age, gender, and ethnicity. In addition to legal requirements for specific transitions to adulthood, there are normative social standards for the sequence in which these events occur: completion of school, first full-time job, first marriage, and first child born. Departing from this ordering of events can have negative consequences. For example, boys with jobs requiring high numbers of hours worked during long periods tend to withdraw from school more rapidly than their peers (Marsh, 1991; Mortimer & Johnson, 1998; Paternoster, Bushway, Brame, & Apel, 2003). Similarly, teen pregnancy is associated with lower educational aspirations and educational attainment (Manlove, 1998).

As mentioned above, the timing, ordering, and consequences of events in the transition to adulthood vary by race and gender (Hogan & Astone, 1986; Shanahan, 2000). For example, childbirth before marriage is more common among Blacks than Whites; however, Whites who become pregnant are more likely to drop out of school than pregnant Black teens are (Manlove, 1998). Teens who are struggling academically may not expect to attend college. These adolescents may not perceive a high opportunity cost to early parenthood or employment; instead, these activities may provide them with alternative pathways to adulthood. As the traditional male adult role has focused on the public sphere of employment and the traditional female adult role has focused on the private sphere of family (Brush, 1999), boys and girls may choose different alternative paths to adulthood.

Thus, our next set of hypotheses concerns both the gendered and racialized reasons for which students leave school. We expect to find that girls are more likely than boys to leave school for family reasons, including early family formation and caretaking responsibilities for their natal families. Given larger family sizes, African American and Latina girls may be more subject to family care responsibilities. We also expect to find that boys are more likely than girls to leave for employment reasons, with White boys more likely than boys of other ethnic groups to leave school for employment reasons, given their relatively advantaged position in the labor market.

In addition to work and family, students may also leave school for other reasons. Some struggle academically. Boys are more likely than girls to repeat a grade in school, and minorities are more likely than Whites to do so (Freeman, 2004). Many studies of grade retention (e.g., Dawson, 1998) find that the reported academic gains from repeating a grade disappear several years later, and the retained students eventually fall behind and are more likely to drop out of school. Furthermore, boys are also more likely than girls to be diagnosed with learning disabilities. African American and Latino students are more likely than Whites to be diagnosed with learning disabilities, and among diagnosed students, they are more likely than Whites to be placed in restrictive educational settings where they are isolated from regular classrooms and nondisabled peers (Fierros & Conroy, 2002). Thus, we expect that boys will be more likely than girls to leave school for academic problems and that African American and Latino students will be more likely than White students to leave school for this reason.

In addition to academic problems that boys may face, a considerable body of literature has documented that boys and ethnic minorities are the focus of school disciplinary policies (Doyle, 1989; Fine, 1991; Jordan et al., 1996). Schools with a high concentration of poor or minority students are slightly more likely to have zero-tolerance policies in place (National Center for Education Statistics, 1998a). Some research indicates that teachers may bias their judgments of student behavior, depending on both the teachers' race and that of their students, with White teachers seeing the behavior of African American students as more disruptive (Downey & Pribesh, 2004). In addition, Blau (2003) finds that African Americans are more likely than teens of other racial and ethnic groups to engage in some behaviors that break school rules and norms, such as failing to complete homework, cutting class, and arriving at school late. Thus, our final hypothesis concerns the extent to which the disciplinary reasons for dropping out will be prevalent among boys and among ethnic minorities. We expect that boys will be more likely to leave school for disciplinary reasons than girls,

but that these effects will be moderated by ethnicity. Thus, we might expect that African American girls will be subjected to disciplinary consequences even though boys overall are more likely to leave school for disciplinary reasons than girls.

In addition to the aforementioned dropout reasons, we can reasonably expect to find ethnic differences in dropping out because of school moves. National statistics have shown the persistently higher mobility rates of Latino students in comparison to those students of other racial and ethnic groups (National Center for Education Statistics, 1998c). Other research has shown the negative effects of mobility on student outcomes, particularly for those students who are making nonscheduled or nonpromotional school changes along with their moves (e.g., Rumberger, 1995). Specifically, Ream (2003) has demonstrated how deleterious these moves can be for Mexican American students who may lack the social ties necessary to buffer them from these moves. Thus, we expect to find that Latino students are more likely than students of other racial and ethnic groups to leave school because of moving.

Although we could also reasonably expect to find significant ethnic and gender differences in the other dropout reasons, we have no a priori expectations about how ethnicity and gender might influence students' probability of dropping out for attendance reasons.

Data and Methods

Data Source

In this article, we compare dropout reasons by grade and age throughout the entire high school career. Data for this project come from the North Carolina Education Research Data Center at Duke University, which houses data on every student in the public schools of North Carolina from the 1996 to 1997 school year to the present. The North Carolina Department of Public Instruction provides most of these data, which include the following information for all dropouts: their gender and ethnicity, their school, age, and grade at the time of dropout, and their reasons for leaving. Reasons for dropping out include academic problems, disciplinary problems (including suspensions, expulsions, and incarcerations), employment, family reasons (including pregnancy, marriage, and caring for children), and attendance reasons.[3] In this study, academic and disciplinary problems are push-out factors, and employment, family, and moving reasons are pull-out factors for leaving school. We analyze the attendance problems as dropout reasons.

This dataset includes information on the entire population of children who have dropped out of North Carolina's public schools. Rather than relying on the dropouts themselves to respond to questionnaires or surveys, this dataset relies on the schools' reports of dropout status. Following federal guidelines, all schools report dropout status in the same manner at the same time.

Having data on so many students permits us to create categories of students based on their gender and ethnicity (see below) with sufficient statistical power to examine how the reasons for dropping out vary across these subgroups.[4] Explicit tests of the relations between race, gender, and dropout reasons are difficult with limited sample sizes, which become even smaller when researchers draw finer delineations among race and gender groups. In this study, the sample size is large enough to create race-gender groupings for African American, Latino, and White high school students and to examine the ways in which the reasons they have for leaving school vary by age and grade in school.

Ideally, we would have access to information about the dropouts' socioeconomic status and household composition, but these data are not available. Although students' social class has been shown to influence their probability of dropping out of school, it is less clear how socioeconomic status influences dropout reasons within a population of dropouts.[5] Although we realize that there are probably differences in social class background in our population of dropouts, it is also likely that, because they are dropouts, they are virtually all disadvantaged to a certain extent.

It would also be useful to establish longitudinal cohorts and trace the progress of the panel of students throughout school. Unfortunately, because of the different reporting guidelines for state dropout and other student files, the creation of these longitudinal data files that include both dropouts and nondropouts is not possible.

Sample and Variables

The sample consists of a cross-section of dropouts from the school year 1998 to 1999, including those who left the 9th, 10th, 11th, and 12th grades. The dropout variable is based on the schools' reports of which students dropped out the previous year. This information is collected in October of every school year and includes those who began the previous school year in a given grade and either dropped out during that school year or did not return to school following the summer break. For example, a student who was enrolled in the ninth grade during the 1998 to 1999 school year and finished the ninth grade but did not return to school during the fall of 1999

would be counted as a ninth grade dropout, as would a student who left the ninth grade during the 1998 to 1999 school year.

Schools also collected information on the student's age when he or she left school. We break down the ages at which the students left in the following manner: age 16 and below, age 17, and age 18 and above. Although 10.94% of our dropouts were reported to have left school at age 15, we include them with those who left school at age 16 because data do not permit determining the precise date they officially withdrew from school and their age on that date. For instance, a 15-year-old student could finish the ninth grade, turn 16 during the summer, and not return to school in the fall. Schools would report that that student left school at age 15. Furthermore, North Carolina, like many other states, has set 16 as the minimum age for dropping out of school legally: We suspect that the process of withdrawing from school begins much earlier, culminating in an official withdrawal date at age 16. We analyze the grade and age at which the teens leave school separately because, although these factors are associated, this relationship is far from perfect owing to a variety of factors, including prior grade retention, student health problems, and variable ages at which students begin school.

Schools also provide data on the gender and ethnicity of each dropout, which parents report when they register children for school. Rather than using separate variables for ethnicity and gender, we combine the ethnicity and gender variables into a series of dichotomous variables as follows: African American male, African American female, Latino male, Latina female, White male, and White female. We contend that the process of dropping out of school varies by both ethnicity and gender simultaneously and that using the dichotomous variables in this fashion better measures the cumulative impact of ethnicity and gender on the educational experiences of these students.

Our analysis strategy has several different steps. First, taking the sample of dropouts in a descriptive analysis, we briefly describe the extent to which dropout rates and the prevalence of dropout reasons vary by grade level and ethnic and gender groups. Next, we use hierarchical logistic modeling with the program HLM (v. 5.02) to examine different facets of processes of dropping out, including the extent to which the reasons for dropping out vary by (a) ethnicity and gender, (b) grade level, and (c) age. We chose this method because of the bias in standard errors that would occur if we conducted logistic regression without accounting for the clustering of observations (students) within units (schools). Finally, we examine the reasons for dropping out and how they vary by grade level, age, and ethnicity and gender for the dropouts in question in a multivariate context. In each analysis, we calculate tests of statistical significance of differences in the dropout rates, comparing earliest and youngest dropouts to more advanced and oldest dropouts.

Table 1a
Frequencies of Ages and Grades of Dropouts

	Age					
	16 and Younger		17		18 and Above	
Grade Level	*N*	%	*N*	%	*N*	%
9	4,071	74.56	1,104	20.22	285	5.22
10	1,821	43.64	1,579	37.84	773	18.52
11	638	19.27	1,425	43.05	1,247	37.67
12	13	0.82	502	31.73	1,067	67.45

Results and Discussion

Table 1a illustrates our rationale for using both age and grade in models, as the two variables are not perfectly correlated. There are dropouts from each age group dropping out of every grade. To illustrate this point, there are 18 year-olds who drop out of the ninth grade, as well as students in their twenties who drop out of tenth, eleventh, and twelfth grades. As Table 1a shows, in our population of dropouts, 74.56% of the dropouts from the ninth grade are age 16 or below, 20.22% are age 17, and 5.22% are age 18 or above. Similarly, 43.64% of the dropouts from the tenth grade are age 16 or below, 37.84% are age 17, and 18.52% are age 18 or above.

Table 1b provides further descriptive analysis of dropout rates through high school for students of various ethnic groups.[6] Significance tests compare dropout rates within race groups and within gender groups: For example, the dropout rate for White 12th graders (4.01%) is significantly lower than that for White 9th graders (7.51%), but the rates for 10th and 11th graders (7.45% and 7.00%) do not differ substantially from those of 9th graders. Table 1b shows that the dropout rates for each ethnic group except Whites are highest in the 9th grade. Male students show a similar pattern in that their highest dropout rate is in the 9th grade. Females, on the other hand, have relatively constant dropout rates across the 9th, 10th, and 11th grades, which then fall off significantly in the 12th grade.

Tables 2a and 2b illustrate how dropout reasons vary by grade and by age. More specifically, Tables 2a and 2b report the percentage of dropouts

(text continues on p. 45)

Table 1b
Comparing Dropout Rates Across Grade Levels, by Ethnic Group and by Gender

	9th Grade		10th Grade		11th Grade		12th Grade		Total	
	N	%	*N*	%	*N*	%	*N*	%	*N*	%
White	39,375	7.51	32,926	7.45	29,154	7.00	25,369	4.01***	126,824	6.71
Native American	521	17.27	344	10.76**	248	10.89*	175	4.00***	1,288	12.50
African American	20,528	10.32	15,336	9.38*	12,554	8.44***	10,028	4.90***	58,446	8.74
Latino	1,625	12.68	1,072	13.81	839	8.11***	622	5.15***	4,158	10.92
Males	33,388	10.33	25,628	9.41***	21,286	8.47***	17,662	4.92***	97,964	8.71
Females	29,728	6.77	25,082	7.02	22,398	6.73	19,282	3.70***	96,490	6.21
Overall	63,116	8.65	50,710	8.23	43,684	7.58	36,944	4.28	194,454	7.47

Note: Significance tests are differences between 9th graders and other grade levels, within ethnic and gender groups.
*$p < .05$. **$p < .01$. ***$p < .001$.

Table 2a
Percentage of Dropouts Leaving School for Push-Out, Pull-Out, and Dropout Reasons by Ethnicity, Gender, and Grade Level

	Push-Out Reasons		Pull-Out Reasons		Dropout Reasons	
	Academic	Disciplinary	Employment	Family	Moving	Attendance
9th grade (N = 5,394)						
African American males	5.89	19.44	7.81	2.21	7.00	57.07
African American females	5.61	7.34	6.14	6.14	5.34	68.62
Latino males	5.65	4.84	13.71	2.42	20.16	52.42
Latina females	6.10	1.22	8.54	8.54	21.95	51.22
White males	8.07	10.76	14.49	2.14	5.98	57.79
White females	6.20	3.33	10.83	8.43	6.39	62.78
Overall	6.54	10.66	10.66	4.21	6.95	59.96
10th grade (N = 4,210)						
African American males	6.24	15.70	9.82	1.96	6.58	59.01
African American females	5.85	3.37	7.62	7.45	4.26	69.86
Latino males	4.41	10.29	14.71	2.94	13.24	54.41
Latina females	3.75	1.25	10.00	12.50	18.75	50.00
White males	8.74	8.30	18.57	1.82	5.90	55.79
White females	7.05	2.22	14.58	9.36	5.60	58.20
Overall	7.11	7.52	13.71	4.88	6.09	59.10

(continued)

Table 2a (continued)

	Push-Out Reasons		Pull-Out Reasons		Dropout Reasons	
	Academic	Disciplinary	Employment	Family	Moving	Attendance
11th grade (N = 3,274)						
African American males	7.52	11.11	12.99	0.86	4.44	63.08
African American females	7.43	2.97	11.04	10.19	6.79	60.08
Latino males	11.11	2.78	16.67	2.78	11.11	55.56
Latina females	19.35	0.00	16.13	12.90	9.68	38.71
White males	9.75	5.74	20.05	3.01	5.74	54.60
White females	6.20	1.37	16.30	9.04	5.05	59.62
Overall	8.00	4.92	15.97	5.59	5.62	58.55
12th grade (N = 1,581)						
African American males	7.64	10.18	14.55	2.91	5.82	58.91
African American females	11.16	1.40	9.30	7.91	9.30	60.47
Latino males	11.11	11.11	16.67	5.56	0.00	55.56
Latina females	7.14	14.29	7.14	14.29	14.29	42.86
White males	14.31	4.89	16.67	1.81	5.07	56.52
White females	7.51	0.86	12.66	10.09	4.72	60.73
Overall	10.44	4.30	14.10	5.57	5.69	58.51

Source: North Carolina Department of Public Instruction, 2000.
Note: 14,364 students in 247 schools. Numbers may not sum to 100 across rows because of the presence of other, unanalyzed dropout reasons.

Table 2b
Percentage of Dropouts Leaving School for Push-Out, Pull-Out, and Dropout Reasons by Ethnicity, Gender, and Age

	Push-Out Reasons		Pull-Out Reasons		Dropout Reasons	
	Academic	Disciplinary	Employment	Family	Moving	Attendance
16 or younger (N = 6,455)						
African American males	4.13	22.13	6.34	2.72	7.75	55.63
African American females	3.79	6.82	5.93	5.56	6.19	70.20
Latino males	2.61	8.70	11.30	3.48	24.35	48.70
Latina females	3.49	1.74	11.30	9.57	20.00	49.57
White males	7.40	10.66	14.94	2.41	6.64	56.40
White females	6.22	2.73	13.15	9.31	5.87	59.64
Overall	5.92	9.26	11.67	5.27	7.23	58.79
17 (N = 4,560)						
African American males	6.33	16.97	11.04	1.61	7.33	56.73
African American females	8.28	4.14	10.51	10.03	5.10	60.83
Latino males	7.81	3.13	14.06	1.56	10.94	62.50
Latina females	18.64	1.70	6.78	11.86	22.03	38.98
White males	9.37	7.25	19.43	1.81	5.18	56.03
White females	6.69	1.70	15.27	8.01	5.18	61.17
Overall	7.92	7.54	14.76	4.58	5.88	58.33

(continued)

leaving school for push-out, pull-out, and dropout reasons by ethnicity, gender, and grade level (Table 2a) and ethnicity, gender, and age (Table 2b). First, Table 2a indicates that the relative importance of several dropout reasons varies by grade. For instance, academic reasons steadily gain importance during high school, with only 6.54% of dropouts leaving the 9th grade because of academic reasons, whereas 10.44% of dropouts leave the 12th grade because of academic reasons. Employment reasons follow a similar pattern, with students more likely to leave later grades for employment than they are to leave earlier grades. In contrast, leaving for disciplinary reasons is most often seen in the 9th grade, with declining frequency thereafter. Here, 10.66% of 9th grade dropouts leave for disciplinary reasons, whereas 4.30% of 12th graders leave school for this reason. Family, moving, and attendance reasons do not vary through the high school career.

Table 2a also reveals the extent to which ethnicity and gender combine to condition the reasons for which adolescents leave school. For example, African American males are more likely to be thrown out of high school for disciplinary reasons than are members of any other ethnic or gender group in the 9th, 10th, and 11th grades. In contrast, African American females are less likely than all males to leave school for disciplinary reasons. On the other hand, family reasons for leaving school seem to be dominated by females, with Latinas in every grade most likely to leave for this reason. Employment reasons for leaving school vary by gender and ethnicity. During the 9th, 10th, and 11th grades, Latino males and White males most frequently leave school for employment reasons, followed closely by White females.

Academic and moving reasons do not appear to be as explicitly gendered. White males drop out for academic reasons more frequently than other ethnic and gender groups in the 9th, 10th, and 12th grades, but Latino males and females leave for academic reasons more frequently in the 11th grade. Both male and female Latinos are more likely than members of other ethnic groups to leave school for moving reasons in 9th, 10th, and 11th grades.

Table 2b shows dropout reasons by ethnicity, gender, and age. Dropout reasons do not vary as systematically across ages as they do across grades. Although the prevalence of dropping out for family and moving reasons falls with age and the prevalence of dropping out for academic reasons increases with age, the increments are not very large. What is remarkable in this table, however, is the steady decline in the percentage of African American and White male dropouts who leave school for disciplinary reasons as they age. Of African American 16-year-old males, 22.13% of dropouts leave for disciplinary reasons, compared with 9.51% of African American 18-year-old males. In fact, this steady decline is seen in all ethnic and gender groups. Furthermore, every ethnic and gender group has a steady increase in the

Table 2b (continued)

	Push-Out Reasons		Pull-Out Reasons		Dropout Reasons	
	Academic	Disciplinary	Employment	Family	Moving	Attendance
18 or older (N = 3,354)						
African American males	8.68	9.51	12.25	1.55	4.02	63.89
African American females	8.98	1.90	8.29	7.95	6.05	66.15
Latino males	11.94	5.97	20.90	2.99	4.48	53.73
Latina females	0.00	3.03	12.12	15.15	6.06	60.61
White males	12.50	4.50	18.50	2.40	4.90	56.80
White females	8.08	0.81	12.12	10.51	5.25	61.21
Overall	9.84	5.13	13.71	4.47	4.92	61.30

Source: North Carolina Department of Public Instruction, 2000.
Notes: N = 14,364 students in 247 schools. Numbers may not sum to 100 across rows because of the presence of other, unanalyzed dropout reasons.

percentage leaving for academic reasons as they age, with the exception of Latinas.

Employment reasons also show an interesting pattern in Table 2b. Seventeen-year-olds of every ethnic and gender group (except Latinas) more frequently leave for employment reasons than do 16-year-olds. This result is not surprising in that they probably have more employment opportunities because of fewer state-imposed restrictions on their employment. The probability of dropping out for employment reasons does not increase linearly for all ethnic and gender groups with age, however: Eighteen-year-olds in several ethnic and gender groups are less likely to drop out for employment reasons than are their younger counterparts. This lack of linearity for ethnic and gender groups is also seen in family reasons, as only Latinas have a linear increase of the percentage leaving school for family reasons with age.

Next, we use multilevel modeling to examine the reasons for which members of various ethnic or gender groups leave school. Table 3 reveals significant differences by ethnicity and gender in the reasons that dropouts leave school. For example, analysis of the push-out reasons reveals that some of our hypotheses were supported: White females are less likely than White males to leave school for academic reasons. Contrary to our hypotheses, however, African American males and females are also less likely than White males to leave for academic reasons. As we expected, African American males are significantly more likely than White males to leave school for disciplinary reasons, but all groups of females are significantly less likely than White males to do so.

Analysis of the pull-out reasons reveals similar differences in dropping out that are conditioned by ethnicity and gender, again sometimes consistent with our hypotheses. Although African American males and all females are less likely than White males to leave for employment reasons, Latino males are equally as likely as White males to leave for employment reasons. Additionally, females of all three ethnic groups are more likely to leave school for family reasons than are White males. Across all male groups, there is no difference in rates of leaving school for family reasons. The *moving* reason for dropping out is primarily conditioned by ethnicity, with both Latino males and females more likely to drop out because of moving than are White males. Finally, the analysis of the attendance reason reveals that females from both African American and White ethnic groups are more likely than White males to leave school for attendance problems.

Next, we investigate the extent to which the reasons for leaving school vary across grade level and age, using analyses that control for the clustering of students in schools. As stated in the hypotheses, push and pull forces may

Table 3
Beta Coefficients and Odds Ratios From Within-School Model of Reasons for Dropping Out

	Push-Out Reasons				Pull-Out Reasons				Dropout Reasons			
	Academic		Disciplinary		Employment		Family		Moving		Attendance	
	Beta	Odds Ratio	Beta	Odds Ratio	Beta	Odds Ratio	Beta	Odds Ratio	Beta	Odds Ratio	Beta	Odds Ratio
Intercept	−2.39***	0.09	−2.32***	0.10	−1.65***	0.19	−3.62***	0.03	−2.80***	0.06	0.25**	1.28
Individual-level variable												
African American male	−0.23*	0.80	0.71***	2.03	−0.30***	0.74	−0.15	0.86	−0.19	0.83	−0.03	0.97
African American female	−0.24*	0.79	−0.61***	0.54	−0.51***	0.60	1.36***	3.90	−0.05	0.96	0.18**	1.20
Latino male	−0.41	0.66	−0.26	0.77	−0.15	0.86	0.13	1.14	0.96***	2.61	−0.06	0.95
Latina female	−0.36	0.70	−1.55**	0.21	−0.61**	0.55	1.66***	5.26	1.02***	2.78	−0.16	0.85
White female	−0.37***	0.69	−1.36***	0.26	−0.27***	0.77	1.38***	3.97	−0.02	0.98	0.15**	1.16
Model fit statistics	Academic		Disciplinary		Employment		Family		Moving		Attendance	
Deviance	36318.45		39198.62		38169.82		35924.63		36790.73		40545.31	
Reliability	0.71		0.60		0.82		0.64		0.68		0.89	

Source: North Carolina Department of Public Instruction, 2000.
Note: $N = 14{,}364$ students in 247 schools. Dichotomous student-level variables are not centered. Student-level variables are used as fixed parameters.
†$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$ with a two-tailed test of significance.

operate differently on students at various grades and ages. Table 4 shows dropout reasons by grade level, and Table 5 shows dropout reasons by the age of the student when he or she left school.

Table 4 demonstrates the dramatic decline in the importance of disciplinary problems as students progress through school. This push factor decreases in importance after the ninth grade as ninth graders are significantly more likely to leave school for disciplinary reasons than are those in every later grade. Results for the other push reason, academic problems, show that 12th graders are more likely to leave school for academic reasons than are 9th graders.

At the same time, Table 4 shows the growth in importance of employment and family in pulling students out of school as they progress through grades. Ninth grade dropouts are significantly less likely to leave school for employment reasons than are dropouts from succeeding grades. Family reasons also show the same broad pattern, with 11th and 12th graders significantly more likely to leave school for family reasons than are 9th graders. For the dropout reasons, there is some indication that schools are less likely to know the reasons for which 10th, 11th, and 12th graders leave school than they are to know why 9th graders leave.

Extending the analyses from the preceding table, Table 5 shows how age influences the importance of push and pull factors in the dropout process. As in Table 4, the youngest students are most likely to leave high school for disciplinary reasons. Table 5 also demonstrates that younger dropouts are less likely to leave school for academic reasons than are older dropouts. These older dropouts are the dropouts for whom school-based, academically oriented intervention strategies may be most effective.

In addition, Table 5 also reveals the increasing importance of employment reasons in pulling students out of school as they age: As teens age, they have more employment opportunities available to them, and with more skills, they may be more attractive to employers. It is also important to note the cross-sectional nature of the data here, in that the dropouts of different ages are facing the labor market at the same time period. Therefore, Table 5 shows that older dropouts are more likely to leave school for employment reasons than are those dropouts aged 16 and under. Although grade level did not affect leaving school for moving, age does, with older students less likely to drop out for moving reasons than younger students.

Table 6 includes all the independent variables jointly. On the whole, the patterns seen in the previous three tables hold with the inclusion of the other variables. For instance, all the ethnic and gender effects in Table 3 remain when the age and grade variables are included, indicating that the

(text continues on p. 52)

Table 4
Beta Coefficients and Odds Ratios From Within-School Model of Reasons for Dropping Out

	Push-Out Reasons				Pull-Out Reasons				Dropout Reasons			
	Academic		Disciplinary		Employment		Family		Moving		Attendance	
	Beta	Odds Ratio	Beta	Odds Ratio	Beta	Odds Ratio	Beta	Odds Ratio	Beta	Odds Ratio	Beta	Odds Ratio
Intercept	−2.67***	0.07	−2.09***	0.12	−2.09***	0.12	−3.01***	0.05	−2.72***	0.07	0.35***	1.42
Individual-level variable												
10th grade	0.06	1.06	−0.33***	0.72	0.34***	1.40	0.14†	1.15	−0.12	0.89	−0.07†	0.93
11th grade	0.16	1.18	−0.77***	0.46	0.47***	1.60	0.26**	1.29	−0.14	0.87	−0.08†	0.92
12th grade	0.41**	1.51	−0.88***	0.41	0.46***	1.58	0.27*	1.30	−0.22†	0.80	−0.12*	0.89
Model fit statistics	Academic		Disciplinary		Employment		Family		Moving		Attendance	
Deviance	36326.54		39280.45		38174.60		37191.73		36894.50		40558.12	
Reliability	0.72		0.61		0.82		0.65		0.68		0.89	

Source: North Carolina Department of Public Instruction, 2000.
Note: N = 14,364 students in 247 schools. Student-level variables are not centered. Student-level variables are used as fixed parameters.
†$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$ with a two-tailed test of significance.

Table 5
Beta Coefficients and Odds Ratios From Within-School Model of Reasons for Dropping Out

	Push-Out Reasons				Pull-Out Reasons				Dropout Reasons			
	Academic		Disciplinary		Employment		Family		Moving		Attendance	
	Beta	Odds Ratio	Beta	Odds Ratio	Beta	Odds Ratio	Beta	Odds Ratio	Beta	Odds Ratio	Beta	Odds Ratio
Intercept	−2.82***	0.06	−2.20***	0.11	−2.04***	0.13	−2.82***	0.06	−2.67***	0.07	0.33***	1.39
Individual-level variable												
Age 17	0.31***	1.36	−0.23**	0.79	0.36***	1.44	−0.09	0.92	−0.22*	0.80	−0.07†	0.93
Age 18+	0.60***	1.82	−0.64***	0.53	0.37***	1.45	−0.11	0.89	−0.35**	0.70	−0.02	0.98
Model fit statistics	Academic		Disciplinary		Employment		Family		Moving		Attendance	
Deviance	36271.47		39236.87		38221.44		37205.29		36838.42		40547.41	
Reliability	0.72		0.63		0.82		0.65		0.68		0.89	

Source: North Carolina Department of Public Instruction, 2000.
Note: N = 14,364 students in 247 schools. Student-level variables are not centered. Student-level variables are used as fixed parameters.
†$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$ with a two-tailed test of significance.

Table 6
Beta Coefficients and Odds Ratios From Within-School Model of Reasons for Dropping Out

	Push-Out Reasons				Pull-Out Reasons				Dropout Reasons			
	Academic		Disciplinary		Employment		Family		Moving		Attendance	
	Beta	Odds Ratio	Beta	Odds Ratio	Beta	Odds Ratio	Beta	Odds Ratio	Beta	Odds Ratio	Beta	Odds Ratio
Intercept	−2.58***	0.08	−2.00***	0.14	−1.97***	0.14	−3.69***	0.03	−2.67***	0.07	0.30***	1.35
Individual-level variable												
African American male	−0.33**	0.72	0.81***	2.24	−0.33***	0.72	−0.15	0.86	−0.16	0.85	−0.05	0.95
African American female	−0.30**	0.74	−0.56***	0.57	−0.54***	0.59	1.36***	3.89	−0.06	0.95	0.18**	1.19
Latino male	−0.35	0.70	−0.26	0.77	−0.08	0.92	0.14	1.16	0.97***	2.65	−0.08	0.92
Latino female	−0.11	0.89	−1.62**	0.20	−0.57**	0.57	1.69***	5.44	1.05**	2.87	−0.17	0.85
White female	−0.31**	0.73	−1.40***	0.25	−0.27**	0.76	1.36***	3.91	−0.05	0.95	0.17***	1.18
10th grade	−0.09	0.91	−0.11	0.89	0.28***	1.32	0.11	1.11	−0.01	0.99	−0.09*	0.91
11th grade	−0.13	0.88	−0.32**	0.73	0.37***	1.45	0.20	1.22	0.06	1.06	−0.14**	0.87
12th grade	−0.02	0.98	−0.26*	0.77	0.31**	1.37	0.17	1.19	0.10	1.11	−0.20**	0.81
Age 17	0.35**	1.42	−0.29***	0.75	0.24***	1.27	−0.07	0.93	−0.23*	0.79	0.00	1.00
Age 18+	0.65***	1.91	−0.78***	0.46	0.21**	1.23	−0.03	0.97	−0.37*	0.69	0.11*	1.11
Model fit statistics	Academic		Disciplinary		Employment		Family		Moving		Attendance	
Deviance	36270.96		39181.51		38285.74		35964.15		36751.85			
Reliability	0.67		0.59		0.82		0.61		0.67			

Source: North Carolina Department of Public Instruction, 2000.
Note: N = 14,364 students in 247 schools; Dichotomous student-level variables are not centered; Student-level variables are used as fixed parameters.
†$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$ with a two-tailed test of significance.

ethnic and gender relations are not because of differences in the ages or grades at which the students drop out.

For the pullout reasons, two significant grade effects from Table 4 are no longer significant with the inclusion of the age variables. In Table 4, 12th graders were significantly more likely to drop out of school for academic reasons than were 9th graders. Table 6 shows that age moderates this relationship and that perhaps 12th graders are more likely to drop out for academic reasons than 9th graders because of differences in their age distribution, as older students are more likely to leave school for academic reasons. In addition, in Table 4, we also found that 10th graders were less likely to drop out for disciplinary reasons than were 9th graders: With the inclusion of the age variables, we find that 10th graders are no longer significantly less likely to leave school for disciplinary reasons. This result suggests that 10th graders are less likely to be subject to disciplinary policies because of their relatively advanced age.

In addition, Table 6 shows one major alteration in the results for pull-out reasons. In Table 4, we saw that students in higher grades were more likely to leave school for family reasons. The results in Table 6, however, suggest that part of that effect is due to the age distribution of the various grades, as students in more advanced grades are not significantly more likely to drop out for family reasons than ninth graders.

Conclusion

As adolescents travel through high school, forming their identities, they confront a wide variety of factors that may push or pull them out of school. These factors, including family and employment responsibilities, vary in magnitude according to the age of the students, the grade in which the student is enrolled, and the ethnicity and gender of the student. Students face unique sets of pressures depending on their ethnicity and gender, and they face unique sets of constraints and options depending on their age. Throughout their adolescence, they need to determine whether to conform to mainstream norms and expectations of adolescence and how to integrate their emerging identities with those norms and expectations.

Using data on all students in the North Carolina public school system in the 1998 to 1999 school year, we find significant variation by grade level, age, gender, and ethnicity in the reasons that high school students leave school. Our results point out the varying force of push and pull factors for adolescents at different grades and ages. Hypotheses are held up most strongly with respect to employment, which is typically considered a pull

factor: It increases in importance for adolescents both as they age and as they move through grade levels. This pattern holds for male and female students and is also fairly consistent across ethnic groups. The increasing power of employment to pull students out of school could reflect several factors: better access to a variety of jobs as teens gain human capital with additional schooling and as the restrictions on their paid employment are reduced. In addition, as adolescents age, they may be subject to societal pressure to help provide for their families to a greater degree than are younger adolescents. In other words, some adolescents may face greater pressure to accept the identity of worker over that of student. They may also want the independence that arises from having their own income. Employers may also be more eager to hire older adolescents who have gained maturity, spent more time in high school, or experienced other types of training or employment.

With respect to the other pull factors of family and moving, our hypotheses held up well. We had predicted that girls would be more likely than boys to leave school for family reasons, with African American and Latina girls more likely to do so than White girls. As expected, we found a significant relationship between gender and dropping out for family reasons. It also appears that Latinas are somewhat more likely than White girls to leave school for family reasons, but there does not seem to be a large difference in this dropout reason between White girls and African American girls. We had hypothesized that older students would be more likely to leave for family reasons; we did find that students in more advanced grades were more likely to drop out for family reasons, but these results were not robust to the introduction of the age variables. Further investigation on this point is needed; it is possible that older girls, like older boys, face more familial pressure to contribute monetarily to a family's upkeep.

As for moving, we had predicted that Latinos would be more likely to drop out for moving reasons than members of other racial groups; indeed, this was the case. We found an inverse relationship between age and probability of dropping out for moving reasons. Perhaps parents of older adolescents are more likely to stay in place or teens may choose to stay in one place on their own, regardless of where and whether their parents are relocating.

Push factors also play a large role in determining who stays in high school. Most striking among the results for push factors are the differences in the percentage of adolescents who are pushed out of school for disciplinary reasons in the ninth grade. We had hypothesized that these push-out events would be largely concentrated in the ninth grade for adolescents of all gender and ethnic groups, and we found this to be the case. Almost 11% of 9th graders and 9% of those dropouts age 16 and under leave school because of disciplinary reasons, a significantly higher percentage than more

advanced and older students who leave school for the same reason. Perhaps these results indicate that public schools rid themselves of the misbehaving youngsters as soon as it is legally possible to concentrate on educating more compliant students.

As we had predicted, male students and African American students are more likely than females and students of other ethnicities to leave school because of suspensions, expulsions, or incarcerations. In addition, the pattern of early dropout for disciplinary reasons holds across gender and ethnic groups and is particularly stark for male students and African American students. Explanations for the increased probability of suffering disciplinary action vary, including racism on the part of teachers and school administrators. One other explanation, based on a developmental perspective, highlights the difficulty of African American males developing an identity that coincides with the behavioral expectations of formal education, an institution that may be viewed as being White, especially if they are both more likely to break some school rules (Blau, 2003) and their behavior is being differentially evaluated (Downey & Pribesh, 2004). Our results cannot speak directly to this controversy: Instead, they show how frequently these types of disciplinary action result in dropout behavior, highlighting the importance of future research in this area.

Students may also be pushed out of school if they suffer academic difficulties. We hypothesized that boys and particularly boys of color would be more likely to drop out for academic reasons, given their greater probability of being retained in school and having generally lower achievement levels. In fact, we found that boys were more likely to drop out for academic reasons, but that White boys were more likely to do so than African American boys and girls. Perhaps those White boys who struggle academically suffer particular stigma, given their otherwise relatively advantaged position in the school. Further investigation should be done on this matter.

Our results also indicate the extent to which studies that focus only on grades 10 to 12 bias results on dropping out. In our data, the dropout rate in the ninth grade was higher than that for any other grade level, and it was particularly high for members of ethnic minority groups. Studies that exclude ninth grade dropouts omit many of those who exhibit the behavior that the studies purport to examine, and they introduce a significant degree of bias because of ethnic differences in dropout rates by grade level. The finding that ninth graders are disproportionately thrown out of school for disciplinary problems across demographic groups indicates that excluding ninth grade dropouts underestimates the extent of dropout due to disciplinary action.

In sum, this study shows that the concept of a dropout process is inaccurate, as students of different gender and ethnic groups are affected by different

push and pull factors at various ages and to varying extents. This realization can serve to help those who design intervention and dropout prevention programs for at-risk youth, as well as concerned school administrators who might like to keep these students enrolled in school.

Notes

1. Social costs associated with dropouts are quantified extensively in Vernez, Krop, and Rydell (1999).

2. Goldschmidt and Wang (1999) compare early dropouts (grades 8 through 10) to late dropouts (grades 11 through 12). However, they do not distinguish 9th graders from 10th graders, nor 11th graders from 12th graders. In addition, they do not examine the effect of age on dropping out independently of grade, nor do they examine dropout reasons.

3. Attendance is often cited by the school as a default reason for dropout when a more specific reason is not known.

4. In contrast, in a study of early dropouts using the National Education Longitudinal Study, Jordan, Lara, and McPartland (1996) begin with a sample size of 1,000 students. Their sample size is then reduced because of missing data.

5. Jordan, Lara, and McPartland (1996) examine this question. In their data, however, students can give multiple reasons for dropping out of school, so the results are not directly comparable to our results.

6. We include Native Americans in Table 1b for descriptive purposes. Unfortunately, the number of Native American dropouts is too small to allow further analyses, and they are not included in subsequent tables.

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Virtually Successful:
Defeating the Dropout Problem Through Online School Programs

Virtual schools offer learning options to high-performing students and provide an opportunity for school success to those at risk of dropping out. Ms. Roblyer reviews the characteristics that make for successful virtual school programs.

BY M. D. ROBLYER

GISELLE, an aspiring ballerina, took Illinois Virtual High School (IVHS) courses during her junior year and the following summer in order to graduate early and spend what would have been her senior year touring the country with her ballet troupe.[1] Now, having graduated from her high school, she is taking IVHS Advanced Placement classes to improve her chances of getting into the college of her choice.

* * *

Leslie missed all her courses in

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Illustration: PhotoSpin

the second half of her sophomore year because she was pregnant. She was highly motivated to get her diploma but had a lot of courses to make up, a baby to care for, and no money for child care at night, when her school offered credit-recovery courses. In her junior and senior years, she took courses through the Michigan Virtual High School (MVHS) half time in addition to her regular courses. Thanks to the flexible scheduling of MVHS, she was able to do the coursework while caring for her baby and graduated on time, with honors. She is currently enrolled in a community college and plans to finish her college degree by taking courses part time.

* * *

A quiet and slightly built youngster, Sidney was a social outcast among the tough, macho youths in his classes and was consistently bullied and harassed. Despite the inhospitable environment for learning, he managed to complete all the necessary courses for high school graduation except one English course, which was offered at his school at night. His mother, fearful of the youth gangs in the area, refused to let Sidney attend night school, so he enrolled in the English class through the Florida Virtual School (FLVS) and is completing the work from his home computer. He is scheduled to graduate with his class.

* * *

IVHS, MVHS, and FLVS personnel confirm that these are not isolated success stories. Rather, they are typical of the reports coming out of these programs, as well from many of the other 19 statewide virtual schools around the U.S.[2] Students venture down the electronic paths of an online-learning cyberworld so that they may better negotiate the increasingly complex and demanding real-world terrain of contemporary life.

Virtual schools — programs that offer regular school courses in distance-education formats — slipped onto the American education scene under the radar of most educators about a decade ago. Utah's Electronic High School, FLVS, and the Concord Consortium's Virtual High School began operations in the mid-1990s. Today, many people may still not be aware that virtual schooling is one of the fastest-growing areas in K-12 education. In its 2005 report, the National Center for Education Statistics found that, as of 2003, 36% of U.S. school districts had students participating in virtual courses for a total of more than 300,000 students.[3] And this number is projected to explode in the coming decade.

Many students enroll in online programs to take advanced courses or to accelerate the pace of their study, as Giselle did; many others seek credit-recovery courses like those that allowed Leslie and Sidney to earn their high school diplomas. But there are a variety of other reasons as well. Students turn to virtual schools when their own school lacks the resources to offer the courses they want or need, or when physical handicaps or disciplinary problems prevent them from attending a face-to-face classroom, or simply because they want the flexibility — or sometimes the invisibility — that they feel virtual courses offer. Home-schooled students are also a growing part of the consumer base for virtual courses. So why, in light of their obvious popularity and value, do many policy makers, educators, and parents view virtual schools with suspicion that approaches alarm?

One aspect of online schooling on which all agree is that students do not succeed equally well in all programs.

Objections both political and philosophical surround the topic of virtual schools. Claims and counterclaims swirl around issues of funding, credit, certification, and even whether or not the whole idea of learning without the teacher and student being in the same room is socially desirable or morally acceptable.[4]

But one aspect of online schooling on which all agree is that students do not succeed equally well in all programs. As with distance courses in higher education, students tend to fail or drop out of virtual courses at a much higher rate than they do in face-to-face ones. Dropout and failure rates for virtual programs are reported to be as high as 60%-70% in some locations.[5] These often-reported dropout figures have confirmed the misgivings of the skeptics, who feel that, despite the successes of Giselle, Sidney, and thousands of other students, virtual schooling seldom results in real learning.

However, some virtual programs have very low dropout and failure rates, and their students post better passing rates than those of traditional school programs on

such key tests as Advanced Placement exams.[6] To document why these programs have such low dropout and failure rates, the directors of five successful virtual schools agreed to share with me their "formulas for success" in a series of interviews. During these discussions, a handful of themes played over and over, like a fugue with variations on the same key points. These school leaders made it clear not only that virtual schools can be as successful as face-to-face ones but that online programs increasingly challenge traditional schools to emulate their "virtual successes" by incorporating online options, services, and teaching strategies into their classes.

WHY SOME VIRTUAL PROGRAMS FAIL

Evidence from research is fairly consistent on what constitutes effective, high-quality virtual courses. Most studies examined postsecondary programs, which have been around longer than secondary school ones, but the quality indicators are always nearly identical to those for K-12 programs. The Southern Regional Educational Board captured these findings in a framework for virtual school quality, based on guidelines established for its Southern Regional Electronic Campus.[7] The framework lists criteria for judging school and program quality in four categories:

- *Basic assumptions.* For example, it is a basic assumption that teachers are Web-trained and that there is equitable access to necessary resources.
- *Curriculum and instruction.* For example, content of high-quality programs is systematically designed and clearly communicated, and activities are highly interactive and offer opportunities for critical thinking related to course objectives.
- *Management.* For example, high-quality programs provide technical assistance and ensure that student work is secure.
- *Evaluation and assessment.* High-quality programs include assessment and have procedures in place for monitoring students during testing.

Not much new here. Most of these sound like criteria that any courses or programs should meet. But while there is general agreement on what it takes to offer high-quality virtual school courses, three factors account for the disparate results from program to program. The first two are easy to spot, because they relate to the reasons students enter an online program and to the way dropouts are calculated.

First, statewide programs like IVHS and FLVS serve large, diverse populations. In these programs, most students (usually about 70% to 80%) are advanced or highly motivated students like Giselle or have a need for course-credit recovery. It is not surprising that programs that enroll a high percentage of at-risk students are much more likely to have high dropout and failure rates. Some programs like IVHS that are known to be successful have higher dropout rates in the summer, when credit-recovery efforts go into high gear. In other semesters, the dropout rate goes down to an average 15%.

A second factor that affects online dropout rates is how and when these rates are calculated. Like regular high schools across the country, methods of calculating dropouts vary.[8] For example, some virtual programs include in their dropout figures any student who signs up for a virtual course but never completes it. Many of the more successful programs offer a drop period of from two to five weeks and count only students who drop out after that period.

A third reason for high dropout rates in virtual schools is more complicated and reflects the challenge of creating effective learning environments, virtual or otherwise. Some virtual schools have substantial start-up resources to design, implement, and sustain the strategies that make for successful programs, while others do not. Some programs are grant-funded, have temporary or

"Main hall near office. Student down."

insufficient numbers of staff, or have little technical support for students when things go wrong — as they invariably do when computers are involved. Of course, this situation parallels that of many traditional schools, which often lack the resources they need in order to do what works well for their students.

WHY SOME VIRTUAL PROGRAMS SUCCEED

The five virtual school directors who shared their "how we did it" stories are listed below, along with their school websites. Clearly, these individuals were particularly inventive and talented educators, as well as excellent managers. Creating a virtual world out of nothing is an achievement in itself; fashioning one that connects with the real world to carry out the functions of a highly effective school is creativity of the highest order. I encourage interested readers to visit the websites of the following schools, listed below along with the name of the person responsible for the online program.

Robert Currie, Director
Michigan Virtual High School
www.mivhs.org

Elizabeth Pape, CEO
Virtual High School, Inc.
www.govhs.org

Donna Vakili, Director
Idaho Digital Learning Academy
http://idla.blackboard.com

Matthew Wicks
Director of Virtual Learning
Illinois Mathematics and Science Academy
Steering Committee Member, IVHS
www.ivhs.org

Julie Young, President and CEO
Florida Virtual School
www.flvs.net

Five common strategies for success emerged from discussions with these directors. I present each one below.

1. *Prepare students for success.* Part of the driving vision of the virtual school movement is the desire to ensure more equitable access to high-quality secondary courses for all students, especially those traditionally disadvantaged by lack of local personnel and material resources. However, not all students have the skills and dispositions required to take advantage of the relatively freewheeling, flexible formats of virtual classrooms. Many students who sign up for online courses have the idea that they will be easier and faster — a breeze compared to coming to class every day and working under the watchful eye of a classroom teacher. They're wrong, of course. Usually, virtual courses must meet rigorous standards and often are more time-consuming than face-to-face ones. Perhaps because of these misaligned expectations, even usually high-achieving students don't always do well in virtual classes.[9]

Good virtual programs anticipate these misconceptions. They provide checklists, self-tests, and, in many cases, no-credit orientation programs to give students a taste of what online learning will be like. "Our students have to complete all parts of our orientation before beginning a regular course," says Donna Vakili of the Idaho Digital Learning Academy (IDLA). "They have model activities, sample discussion forums, even a simulated exam. It also covers our Acceptable Use Policies and netiquette." MVHS takes a slightly different approach to preparing students. "In addition to our Online Learner Orientation Tool," says Robert Currie, director of MVHS, "we have MVHS 'ambassadors' who travel around the state to meet with mentors and principals and review students' characteristics for success. Then it's up to the school to make sure kids are ready to learn online."

For some programs, an extended drop period of as long as five weeks takes the place of an online orientation. Students can try out virtual learning, and, if they find it's not for them, they can drop out with no penalty during this time.

2. *Prepare teachers for success.* Just as good students in regular classrooms aren't always the best cyberlearners, good teachers in regular schools don't always make the leap from face-to-face classrooms to virtual ones.[10] Those who operate good virtual programs believe that effective online teachers, mentors, and facilitators are made, not born. Each program has its own rigorous and extensive training, tailored to its own classroom platform and methods, including actually teaching part of an online course with the guidance of a mentor. Elizabeth Pape, CEO of the Virtual High School, Inc. (VHS), says, "Our professional development not only prepares teachers who can effectively monitor and facilitate student work and discussions, we show them how to

build a community of learners out of a group of highly independent people."

In addition to teacher training, some virtual programs also host face-to-face conferences for their instructors. For example, MVHS offers a summer conference called "Collaboration of the Minds," in which teachers share their expertise and experiences and give input on what should be included in future inservice activities.

3. *Use interactive, flexible course designs.* Virtual programs tend to emphasize hands-on, project-based assignments that require students to work together. "Our design standards require group and team activities in every course," says VHS's Pape. "We teach teachers how to form the teams and foster student-to-student interaction. It's through interaction that students construct their knowledge."

"One of the goals of each of our courses is to make sure a student cannot complete it just by sitting at a computer," says Julie Young of FLVS. "They always have away-from-computer activities; some require experiments or project development, and some involve them in interaction with their local community. We try to allow for a variety of different ways students can show mastery of concepts. We also require substantial student-to-student interaction. This is a real challenge, because we also have rolling enrollment, with students coming into the course at different times. We encourage each student to locate a partner to work with."

Not all the virtual schools stress this kind of interaction in all courses, however. The IVHS and MVHS programs tend to vary the approach depending on the type of course. "The more flexible you are with the course calendar, the more difficult it is to have high student-to-student interaction," observes MVHS's Currie. "Our Flex-90 courses not only have flexible enrollment, they allow students to complete them as quickly as they want." Matthew Wicks, a member of the steering committee of IVHS, agrees. "Project-based activities are always a conscious part of our course design," he says, "and high student-to-teacher interaction is emphasized. But we feel that high student-to-student interaction isn't always possible — or necessary."

4. *Monitor and support teachers.* An interesting feature in nearly every one of these programs is the combination of high support for teachers in their work with students, along with constant monitoring to ensure that teachers comply with program expectations and standards. Most programs design and test courses ahead of time, so that teachers can focus on teaching, rather than instructional design. Objectives, projects, course resources, assessments — these are standard for all personnel who will teach a given course. In addition, all programs stress the importance of site facilitators (variously known as curriculum coordinators, instructional leaders, online principals, or mentors) who help teachers handle registration and administrative tasks and, in some programs, help monitor student participation. These facilitating personnel are often the same individuals who monitor the teachers.

Virtual programs set the bar high for teachers' work with students. Teachers must "be in the course space" most days and reply to student queries and issue grades for assignments in a timely way (i.e., within 24 hours). For example, IDLA requires teachers to prepare a weekly progress report for each student as well as a description of the challenges teachers are meeting in the course. Teachers must telephone students who are inactive.

FLVS requires each teacher to talk by phone with each student *and a parent* once a month. And the teachers must log the calls. "We monitor our teachers closely," says Julie Young. "Facilitators look at everything: the phone log database, the type of feedback students are getting, how timely and how fair grading is. They even read e-mails to judge the tone of communication between teachers and students. All teachers are on annual contract, and we review them continually in light of their performance. We want people who buy into our student-focused culture. At the same time, we have very low staff turnover." In addition, the FLVS per-pupil funding model is unique, making it in the school's best interest to have highly effective teachers. Its payments from the state are based solely on each student successfully completing courses. This funding model promotes teacher quality and accountability, which are monitored through continual training and mentoring.

"We find it helpful to teachers to get teachers together in the summer to share best practices," says IDLA's Vakili. And IDLA also rewards teachers who are able to keep students enrolled and learning. "For students deemed at high risk of failure, teachers get an additional $50 per kid if they're active in the course for at least 3 weeks. They get another $50 if the student completes everything successfully."

5. *Monitor and support students.* "We recognize we are a choice program," says FLVS's Young. "We foster a continuing 'culture of collaboration,' in which staff members come together and focus on what is best for each student." This "students first" perspective charac-

terizes the climate of all these virtual schools. Each program requires that teachers interact personally with each student, and each program provides support tailored to individual student needs. It is easy to see that the amount of person-to-person contact between instructional personnel and individual students exceeds that in many face-to-face programs.

Student success is the focal point of all activities, not just instruction. Flexible registration and pacing options are "customer oriented" to meet students' schedules. Initial welcoming e-mails and intake interviews help ensure that students will have what they need to learn efficiently. The monitoring and progress reporting systems make sure no one falls through the cracks.

REAL-WORLD LESSONS FROM VIRTUAL SCHOOLS

Scalability is usually the first issue raised with an innovation of this type. Yet these successful schools are not small, pilot projects. FLVS, one of the oldest of the online programs, enrolled more than 21,000 individuals during the 2004-05 school year. In 2005, it began franchising its delivery model to other sites. IVHS enrolled around 5,000 students during this time period, a 53% increase from the previous year, and even larger numbers are projected for future years. MVHS's test-prep courses alone had nearly 50,000 registrations in a single year.

Despite their rapid growth and the limitations inherent in online communication, successful virtual schools manage to see that students have the skills and materials they need in order to learn and that teachers have the support and resources they need in order to teach. They make courses hands-on and interactive to keep students involved, and they find ways to give each student substantial one-to-one monitoring and tailored attention. At the same time, both students and teachers must meet the highest standards of accountability.

Virtual schools are the latest challenge to our common understanding of "a place called school." Just as the home-schooling movement showed that students can learn successfully from parents in home settings, virtual schooling shows that they can also learn "anywhere, anytime, and anyplace," without ever meeting a teacher in person. Both kinds of schooling clearly profit from the absence of issues that often slow learning to a crawl in traditional schools: dealing with the physical plant, behavior problems, special needs, and lack of motivation. Experts are reluctant to predict the demise of brick-and-mortar schools in favor of electronic ones, and brick-and-mortar schools offer many practical benefits that online programs cannot completely duplicate. But the growing popularity of virtual programs indicates that changes may be in store for the way schools of all kinds operate.

Choice and flexibility are clear motivators for students who turn to online courses. Many students of virtual schools could take courses from their local schools, but they choose to take them online. Other students use virtual courses to supplement the selection available in their local schools. Still others, for various reasons, could not complete their high school program without online courses. In light of their growing popularity and the success of programs such as those described here, online options seem destined to become part of the array of services all schools must offer in the competitive education marketplace.

Yet virtual schools could offer even more. Successful online programs have discovered how to bridge the distance between students and schools in ways that make learning both accessible and compelling. Many students have succeeded online who would otherwise have failed and dropped out. Virtual schools are quickly learning how to minimize their own dropout problems. In doing so, they may also show traditional schools how they can better address theirs.

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1. All student names mentioned here are pseudonyms.

2. John H. Watson, *Keeping Pace with K-12 Online Learning: A Review of State-Level Policy and Practices* (Naperville, Ill.: North Central Educational Laboratory/Learning Point Associates, 2005).

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Article

Promising School-Based Interventions for Reducing Aggressive Behavior and Student Dropout

Paul J. Riccomini, Dalun Zhang, and Antonis Katsiyannis

Abstract: *This article synthesizes findings from previous research on effective interventions for students exhibiting aggressive behavior in an effort to reduce the likelihood that these students will drop out of school. Because aggressive behaviors can negatively impact academic success and increase the probability of dropping out of school, evidenced-based dropout prevention practices are especially needed by schools. Based on a systematic review of literature and subsequent meta-analysis, Cobb, Sample, Alwell, and Johns (2005) concluded that cognitive-behavioral interventions were effective in reducing aggressive behavior and the likelihood of dropping out of school. Findings from this review highlight interventions for secondary public school settings and include (a) anger control curriculum, (b) cognitive-behavioral training, (c) self-management skills training, (d) alternative social response training, and (e) sustained school engagement procedure—Check and Connect. An overview of additional resources is also provided.*

The No Child Left Behind Education Act of 2001 (NCLB) is arguably the most significant federal legislation intended to improve the academic achievement of students across the United States. The Act establishes a rigorous accountability system that involves rewards and punishments for states and schools based on student performance. These stringent requirements under NCLB, particularly with regard to adequate yearly progress (AYP) and graduation and dropout goals, present an enormous challenge for educators (Simpson, LaCava, & Graner, 2004), especially with regard to students with disabilities.

Of particular concern for school personnel are the dismal outcomes experienced by students exhibiting inappropriate/aggressive behaviors, typically classified as students with emotional and behavioral disorders (E/BD). Students with serious behavior problems are already experiencing school failure and yet school administrators often implement disciplinary decisions resulting in exclusions from school (Jackson & Panyan, 2002; Morrison & D'Incau, 2000). Exclusions, however, are often counterproductive in reducing problem behaviors and often precursors to grade retentions, dropping out of school, academic failure, and delinquency (Cartledge, Tillman, & Johnson, 2001; Elias, 1998).

Students with E/BD are reported to have the lowest GPA for any group of students with disabilities, as well as lower rates in grade level competency exams. It is estimated only 2/3 of students with E/BD are able to pass end-of-year competency exams (Anderson, Kutash, & Duchnowski, 2001; Heward, 2003; Bradley, Henderson, & Monfore, 2004). The combination of low achievement and deviant behaviors puts students with E/BD at serious risk for difficult and detrimental life experiences (Maag & Katsiyannis, 1998). Consequently, a need exists for educators to implement scientifically-validated interventions that are more individualized, positive, and that provide more function-based support for students with E/BD (Martin, Tobin, & Sugai, 2002).

Cobb, Sample, Alwell, and Johns (2005) concluded that cognitive-behavioral interventions were effective in reducing aggressive behavior and dropping out of school through a meta-analysis of 16 studies intervening with 791 youth with behavioral disorders, attention deficit/hyperactivity disorders, and learning disabilities. This brief focuses on eight of the studies included in the meta-analysis because they involved secondary public school settings. The intervention areas include: (a) Anger Control Curriculum, (b) Cognitive-Behavioral Training, (c) Self-Management Skills Training, (d) Alternative Social Response Training, and (e) Sustained School Engagement Procedure—Check and Connect.

Anger Control Curriculum

Robinson, Smith, and Miller (2002) investigated the effects of a curriculum that focused on teaching cognitive problem-solving skills on inappropriate behavioral responses to anger. The subjects included 13 middle school children with chronic behavior problems enrolled in a special school and 28 students with emotional or behavioral disorders enrolled in self-contained classrooms. The treatment involved implementing an Anger Control Curriculum, which targets inappropriate behavioral responses to anger by middle school students. The curriculum focuses on teaching cognitive problem-solving skills. The curriculum includes six elements: understanding and handling anger,

effective communication, relaxation techniques, problem-solving skills, modeling of intervention steps, and practices. The treatment includes the following two steps.

- In Step One, the teacher provides instruction to the target students on the 10 lessons in five weeks (two lessons per week); each of the lessons lasts about 50 minutes.
- In the second step, following the 500 minutes of treatment exposure, the students go through another five practice sessions for five weeks (one session per week), each of which lasts 50 minutes. A major feature of the curriculum is it involves a great deal of discussions, role-playing, and student activities.

The researchers analyzed data comparing the posttest performance of students in the treatment group to the performance of students in control groups and found a number of significant differences favoring students in the treatment group. The differences existed in State Anger, Angry Temperament, Angry Reaction, Anger-Out, and Anger Control. Teachers who provided instruction to the students also reported positive changes shown by the students.

Presley and Hughes (2000) examined the use of peer delivered instructional interventions to teach four high school students (ages 14 to 17) with behavioral disorders to express anger appropriately. The instructional interventions included peer instruction, self-instruction, and a traditional anger control program. Instruction was presented directly to these four students by general education peers. Three peer trainers were taught to conduct social skills instruction in a 30-minute individual training session. A total of 21 situational role plays were used. Five of these instructional plays were adapted from the Walker Social Skills Curriculum; the remaining plays were based on observations of student interactions.

The intervention, the Triple A Strategy (ASSESS, AMEND, and ACT) was adapted from the Walker Social Skills Curriculum. Specifically, during ASSESS, the students were taught to perform a six-step self-instructional sequence—wait for three seconds before responding and then stating and answering aloud five questions (e.g., "what is going on?"; "Did he/she do this on purpose?"). During AMEND, participants role-played three steps designed to guide them in choosing an appropriate response (speaking to as opposed to hitting), express how they felt, and ask how the other person (peer trainer) felt. During the last part, ACT participants performed responses chosen during AMEND and verbally evaluated their performance of the Triple A Strategy.

Findings from the study indicated improvement in the way participants were able to express anger in role-play situations. In addition, three of the students decreased the rate at which they responded inappropriately in naturally occurring anger-provoking situations. This study is significant as it provided evidence that general education peers can be effective in teaching high school students to respond appropriately in anger-provoking situations during role plays as well as in natural settings (a decrease in the rate of anger behaviors).

Cognitive-Behavioral Training Program

Etscheidt (1991) recommended the use of a cognitive-behavioral training program to reduce aggressive behavior and increase self-control. The program was adopted from the Anger Control Program Model designed by Lochman, Nelson, and Sims (1981). It assists students in modifying their aggressive behaviors by altering their cognitive processing of events and response alternatives. Implementation of the program generally takes three weeks and consists of 12 structured 30-40-minute lessons. The core training program teaches students to engage in five steps in dealing with aggressive behaviors. These include

- stop and think before you act,
- say how you feel and exactly what the problem is,
- think of as many solutions as you can,
- think ahead to what might happen next, and
- try it when you have a good solution.

In her study, Etscheidt selected 25 male and 6 female adolescents with behavioral disorders enrolled in a special school. The participants' ages ranged from 12 to 18 years. She divided them into three groups: Group I participated in the cognitive-behavioral training program; Group II received this same training, plus a positive consequence for using the skills taught in the program; and Group III was a control group. The results of the study indicated that students in the two groups that received the cognitive-behavioral training did significantly better in self-control and exhibited fewer aggressive behaviors than students in the control group. The addition of an incentive, however, did not make significant differences.

Smith (1992) examined the efficacy of a metacognitive strategy to reduce aggressive acts and anger behavior of elementary and secondary students. Nine students (three in elementary, three in middle, and three in high school) placed in resource or self-contained classrooms were involved. Three multiple baseline across subjects (three students in each study) were used. The intervention utilized was a metacognitive strategy intended to enable students to control their own behavior through problem-solving techniques. The strategy training took place during a class period for five consecutive days. The elements of the strategy included a commitment to participate, teaching of the ZIPPER strategy (Zip your lips; Identify the problem; Put yourself on hold; Put yourself in charge; Explore other responses; Restart an activity) (Smith 1992; p.21), modeling and self-instruction training, practice (e.g., role playing) and feedback, and teaching for generalization.

Overall, findings indicated that students used the strategy to reduce aggressive behaviors and anger acts. The high school students appeared to reduce their aggressive acts though they stated that they did not use the strategy.

Self-Management Skills Training

Ninness, Fuerst, and Rutherford (1995) developed a self-management training program to reduce disruptive behaviors. This program involved videotaping target students' interruptive behaviors and subsequent analysis of these behaviors. Following the analysis of the behaviors, target students received formal instruction in classroom-related social skills and procedures for self-management in a frequency of one hour per day. Students also practiced on these skills with supervision and without supervision.

To investigate the effectiveness of the program, the researchers conducted a multiple baseline across settings single-subject research involving two boys, aged 13 and 14 years. The dependent variable they used to measure and examine effectiveness was off-task/disruptive behavior. Both students showed a significant drop of inappropriate behaviors during the treatment session.

Training Alternative Social Responses

Knapczyk (1988, 1992) developed and examined the effectiveness of a treatment technique to reduce aggressive behaviors. The treatment involves application of modeling and rehearsal procedures to the training of social skills. Students learn social skills that serve as alternatives to aggressive behaviors in a particular setting, for example, the special education class and the gym class.

- First, observations and analyses of appropriate behaviors in the setting are conducted to identify the types of social skills and interaction patterns that allow the students to successfully complete tasks without displaying aggressive behaviors.
- Second, a 10-minute videotape is prepared. In this video, two student leaders serve as actors. One of the student leaders simulates the target student's aggressive behaviors and demonstrates acceptable alternative responses; the other student leader's performance represents the actions and reactions of fellow students.
- Third, the special education teacher provides training to the target student. The training involves viewing the videotape with the target student, elaborating the episodes presented on the videotape, and indicating what happens if the participant exhibits appropriate or inappropriate social behaviors.
- Fourth, the target student is asked to present examples of his or her performance in the same setting that correspond to the videotaped segments and generate additional performance alternatives.
- Fifth, the teacher provides feedback to the target student concerning whether the alternatives meet the requirements of the situation.
- Next, the target student views the videotape repeatedly to describe the circumstances for performances, and rehearse alternative responses on the first three days of each treatment. Five days after viewing the videotape, the teacher monitors the target student's performances in the corresponding setting, discusses the student's performances with his or her at the end of the class, and provides praise and encouragement for the student's engaging in alternative social behaviors.
- In the final step, follow-up is needed to examine the long-term effects of the training by observing and recording the target student's engagement in alternative social behaviors when teacher training is terminated.

Knapczyk's research studies demonstrated that the treatment significantly reduced aggressive behaviors for students participating in his study.

Sustained School Engagement Procedure—Check and Connect

Sinclair, Christensen, Evelo, and Hurley (1998) examined the efficacy of a dropout procedure that involved monitoring and school engagement strategies. In this study, 94 students with learning and behavioral disorders received interventions in grades seven and eight; half continued receiving interventions in grade nine. The intervention program used was the Check and Connect, a dropout prevention and intervention procedure. Central in this program is the role of the monitor. This person typically carries a load of 25 students and focuses on students' educational progress and their engagement with school.

The "Check" component involves a student's engagement with school by monitoring on a daily basis tardiness, skipping classes, detention, suspensions, course failures, and the accrual of credits. The "Connect" component involves the implementation of basic interventions such as sharing information about the monitoring system with the student, providing regular feedback about progress, discussing the importance of staying in school, and problem solving. Problem-solving activities were particularly emphasized. At least once a month, students were guided through real or hypothetical situations by using a five-step problem-solving strategy (i.e., 1. Stop. Think about the problem; 2. What are some choices?; 3. Choose one; 4. Do it; 5. How did it work?). The Connect component also involves intensive interventions such as problem solving (e.g., social skills groups, parent problem-solving meetings, behavioral contracts), academic support (e.g., tutoring/mentoring arrangements, academic contracts, class schedule adjustments) and recreation and community service exploration (e.g., after-school activities, community-based tutoring, summer job arrangements).

To assess the effectiveness of the program, three variables were considered—(a) participation in school (e.g., year-end enrollment status, attendance pattern, assignment completion); (b) school performance (e.g., accrual of credits, academic competence); and (c) connection to school (i.e., relevance of school and expectation to graduate). Students who participated in the program during ninth grade were more likely to be enrolled at the end of the year and have higher ratings in assignment completion (school participation) as well as more likely to accrue more credits and be on track to graduate in five years. No significant differences were noted regarding the measures associated with connection to school.

Conclusions

Findings from this review support the importance of teaching appropriate nonaggressive behavior for students with E/BD. It is central to note that all of the interventions reviewed in this brief not only focused on reducing aggressive behaviors, but also focused on increasing appropriate social behavior. Directly and explicitly teaching students appropriate social interactions in difficult situations is an essential component of any intervention targeting aggressive behavior. Rather than simply decreasing aggressive behavior, the interventions taught and reinforced appropriate nonaggressive behavior.

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Appendix A

An Overview of Research-Supported Practices

Lewis, Hudson, Richter, and Johnson (2004) identified the following evidence-based social behavior change practices within E/BD in addressing problem behaviors.

- *Teacher praise/reinforcement.* The application of contingent positive reinforcement following desired appropriate social behavior, typically in the form of teacher attention or recognition.
- *Opportunities to respond during instruction.* When teachers alter instructional methods and materials to permit or require high levels of correct on-level academic responding, there is an increase in task engagement (Sutherland & Wehby, 2001).

Positive Behavior Support. Positive Behavior Support (PBS) is defined as a "Broad range of systematic and individual strategies for achieving important social and learning outcomes while preventing problem behavior" (Sugai et al., 2000). PBS as a practice incorporates several individually empirically validated practices into a continuum of supports for students with challenging behavior from universal or schoolwide supports to intensive individual student supports (Lewis & Sugai, 1999, and the Center on Positive Behavioral Interventions and Supports (PBIS) http://pbis.org.)

- *Functional-assessment-based interventions.* The process for gathering information about the function of the behavior that may be used to maximize the effectiveness and efficiency of behavioral support (O'Neil, et al., 1997).
- *Self-management.* Self-management programs typically involve two or more of the following strategies: self-monitoring, self-evaluation, and positive reinforcement. These programs aim to teach students responsibility for their social behavior and academic performance (Mitchem & Young, 2001).
- *Social skill instruction/teaching desired replacement behavior* (Sugai & Lewis, 1996).

Appendix B

Popular Social Skills Curricula

Second Step: A Violence Prevention Curriculum. This program teaches social and emotional skills for violence prevention. The program includes research-based, teacher-friendly curricula, training for educators, and parent-education components (To purchase this curriculum visit http://www.cfchildren.org/ssf/ssf/ssindex/.)

The Walker Social Skills Curriculum: The ACCESS program, adolescent curriculum for communication and effective social skills. The program teaches peer-to-peer skills, skills for relating to adults, and self-management skills. The ACCESS curriculum, which is designed for use by both regular and special education teachers, may be taught in one-to-one, small-group, or large-group instruction formats (To purchase this curriculum visit http://www.proedinc.com/store/index.php?mode = product detail&id = 0365.)

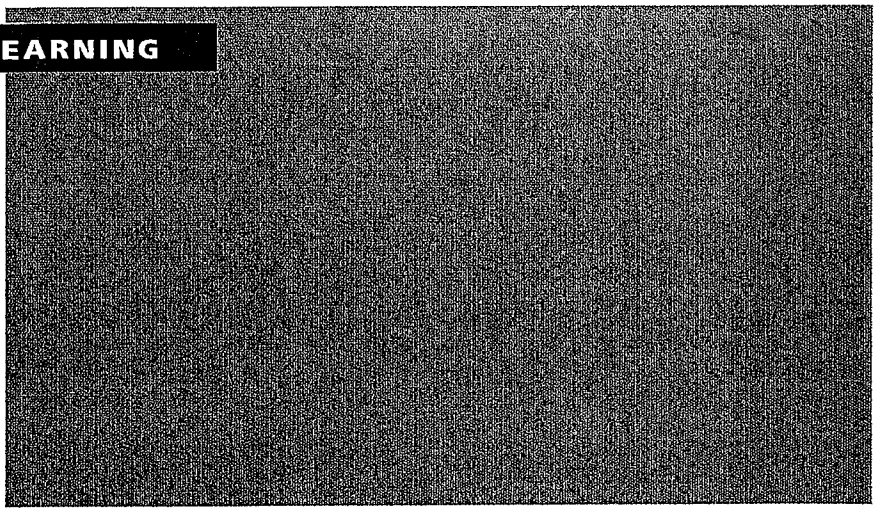
The following books and other resources may be purchased through Research On-Line, http://www.researchpress.com/product/item/4950/#49854.

- *Aggression Replacement Training:* A Comprehensive Intervention for Aggressive Youth. This intervention program is designed to teach adolescents to understand and replace aggression and antisocial behavior with positive alternatives. The program's three-part approach includes training in Prosocial Skills, Anger Control, and Moral Reasoning.
- *The Prepare Curriculum: Teaching Prosocial Competencies. The Prepare Curriculum* presents a series of 10 course-length interventions grouped into three areas: reducing aggression, reducing stress, and reducing prejudice. It is designed for use with middle school and high school students and can also be adapted for use with younger students.
- *Skillstreaming the Elementary School Child. Skillstreaming* addresses the social skill needs of students who display aggression, immaturity, withdrawal, or other problem behaviors. The curriculum contains 60 skill lessons and includes five skill groups: Classroom Survival Skills, Friendship-Making Skills, Dealing with Feelings, Alternatives to Aggression, and Dealing with Stress.
- *Skillstreaming the Adolescent: New Strategies and Perspectives for Teaching Prosocial Skills. Skillstreaming* addresses the social skill needs of students who display aggression, immaturity, withdrawal, or other problem behaviors. The curriculum contains 50 skill lessons and includes six skill groups: Beginning Social Skills, Advanced Social Skills, Dealing with Feelings, Alternatives to Aggression, Dealing with Stress, and Planning Skills.

Appendix C

Dropout Prevention Model

Check & Connect. This model uses a comprehensive approach toward promoting students' engagement. The model is currently being replicated and field-tested for youth with and without disabilities in grades K–12 in urban and suburban communities. Key features of the model are interrelated and include Relationship Building, Routine Monitoring of Alterable Indicators, Individualized and Timely Intervention, Long-Term Commitment, Persistence, Problem Solving, and Affiliation with School and Learning. (For more information, visit http://ici.umn.edu/checkandconnect/model/default.html.)



Reduce Your Dropouts:
It's Not as Hard as You Think

By Karen S. Scott

What if you learned your dropout problem could be reduced with a low-cost strategy that does not require another program? What if the solution were based on a commonly accepted value with which few would find fault? Would you be interested?

The solution can be found in improving relationships between at-risk students and school staff members. This approach is often overlooked by administrators. Creating an environment where students experience caring, respectful, and encouraging relationships with all adults can make a difference for students at-risk of dropping out.

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PREVIEW

Many students drop out of school because they feel that they are unteachable and unliked by administrators and teachers.

Teachers may not be aware of how they send negative messages to at-risk students.

Improving student–staff member relationships can improve a school's dropout rate.

STOCK PHOTO IMAGE

Stevenson & Ellsworth (1993) and Carley (1994) identify poor relationships with teachers as a causal factor in dropping out. Most dropouts can't identify one teacher to whom they could go for help, and most believe that no one at school cared about them.

Administrators are aware of the importance of student-teacher relationships to the learning environment. Most remained focused on the development of skills related to content and pedagogy, however, and give little attention to relationships. Studies show that students of all ages and backgrounds, even those who seem detached, want a teacher who cares about them (Bernard, 1996). Unfortunately, this element is missing for most students who drop out.

Stories From Dropouts

"Teachers don't care about me" is a common lament of dropouts. They relay stories of asking for help and not receiving it, being humiliated, and feeling pushed out of school by teachers and administrators who clearly conveyed the message that were not wanted. The sadness and rejection in their eyes and voices defy the tough, uncaring demeanor they put on as a defense against feelings of inadequacy. Students who are often viewed as apathetic and

As adults, we do not continue to go places where we are embarrassed or treated rudely. Students eventually make the same choice. They come to believe that they are unliked, unwelcome, and incapable of succeeding in school.

unruly give examples of disparagement that should make any educator cringe.

In an interview with me, one girl relayed her story, fighting back tears of frustration and humiliation: "I know people don't think we're telling the truth about teachers not helping us. I told my mom the teacher wouldn't help, and she didn't believe me till she went to school for a conference. Then the teacher said to my mom, 'If I stopped to help every student who asked for help and worked with them for even one minute, it would take 20–30 minutes of each class. I don't have time for that.' Then my mom understood why I was giving up. If you can't get help and you don't understand, what else are you supposed to do?"

Listening to such stories, I am keenly aware of the disconnect between the messages espoused by educators and the actual experience of some students. I am reminded of the power of a teacher to encourage a student or to quell all hope. Most staff members use the best skills they have, but even positive efforts may be misconstrued by students. Most teachers view themselves as caring and helpful, and many students would agree. However, the perception of at-risk students is quite different.

Assessing Relationships

Student-staff relationships are probably good for most students, especially those who are motivated, work hard, and fit in socially. But how much attention has been given to the day-to-day interactions between staff members and the most at-risk students? These are the students who provide the greatest challenge.

Many eventual dropouts have chronic attendance and behavior and academic problems. Others provide no distraction or trouble. They sit quietly in classrooms, appearing unmotivated, and unconcerned. They simply drift away, without attracting any attention.

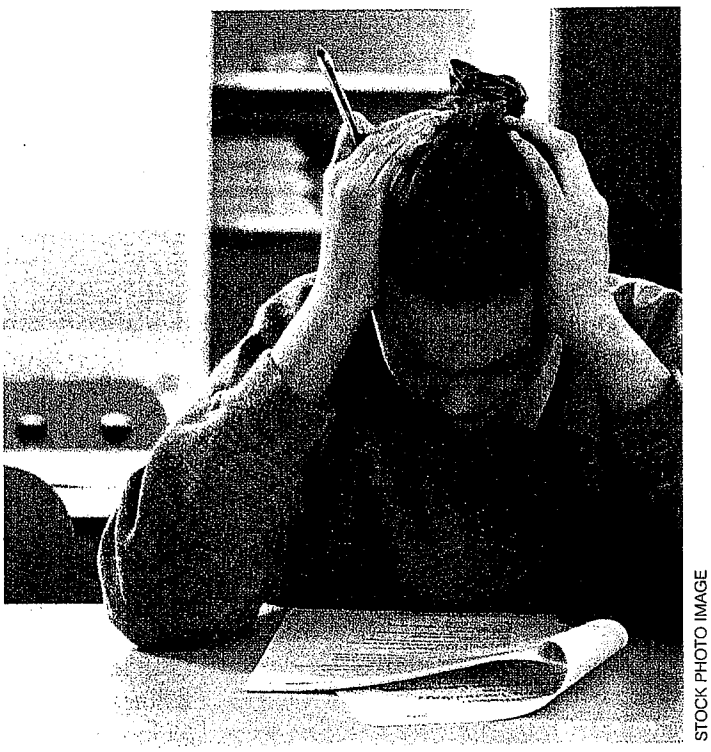
The answers to the following questions can yield a picture of how at-risk students might feel about their school:

- What goes on in classrooms for the most-challenging students?
- Are students are treated respectfully, even when their behavior is not particularly civil?
- Are they offered help and encouragement, even when they do little to help themselves?
- Are students receiving positive messages that their teachers know that they are capable of learning and achieving, even when they have given up on themselves?

Unintended Consequences

Two distinct dynamics in student–staff member interactions cause students to feel that no one cares about them. One occurs when adults express momentary frustration through sharp, disparaging comments. Even more disturbing are remarks from staff members who have given up on a student and feel justified in their attacks.

The other dynamic occurs when a student does not understand cause and effect. In this situation, the student doesn't connect previous action to the negative response. As a result, the adult response seems unpredictable and uncaring.



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Expressions of Frustration

Every administrator has encountered staff members who unintentionally vent their frustration through sarcastic, withering remarks. They lash out with such statements as, "I don't know why I waste my time." Such comments strike at the core of students' weaknesses and self-worth. Some adults dole out words and behaviors that they themselves would never accept. They embarrass students who are not cooperative, believing that they are somehow teaching them a lesson.

Instead, the lesson they teach is that school is a place where students are made to feel inept and worthless. They teach the lesson that mistakes and poor judgment cannot be overcome. As adults, we do not continue to go places where we are embarrassed or treated rudely. Students eventually make the same choice. They come to believe that they are unliked, unwelcome, and incapable of succeeding in school (Jordon, Lara, & McPartland, 1996). Ultimately, they drop out, choosing not to subject themselves to further humiliation and failure.

Although the adult may not remember the incident, the student does. The pain and humiliation are imbedded in the student's memory for the rest of his or her life. A student will be able to recall, with uncanny clarity, every detail of an incident in which he or she was embarrassed or felt stupid. The experiences directly affect students' attitudes about themselves and their place in school.

The impact of such negative incidents is much more damaging for at-risk students than for successful students. The student who is most vulnerable feels the pain of such incidents as one more in a series of rejections. Over time, the negative remarks add up to an astonishingly harsh condemnation that destroys motivation and self-worth. One such event may be the last straw in a student's decision to drop out of school.

Sometimes the behavior of the staff member is excused because the student in question was "difficult." Such excuses imply that educators have no other methods of managing the behavior of challenging students. Even if the behavior of a student is out of line, a staff member should demonstrate enough maturity and self-control to respond appropriately, without attacking or undermining the worth of the student. Behind the rough, sometimes angry, exterior of the difficult student is someone's child who is struggling to find his or her way.

Failure to Understand Cause and Effect

Research has shown that many at-risk students have deficits in identifying causal relationships (Payne, 1998). Students who fail to understand cause and effect are not successful in school and form negative perceptions of teachers. For many struggling students, the chaotic, random nature of relationships outside of school provides no context in which they can learn this basic concept. The lack of predictability in their home lives prevents them from understanding that behaviors lead to predictable consequences.

Without this understanding, students have no sense of their ability to control life. Success and failure are attributed to chance or luck, and the nature of their interactions with others is viewed as a reflection of how well the other person likes them. Unable to see how their actions contribute to negative interactions, students are left to assume there is just something about them that teachers don't like or that they simply don't have much luck in school. They internalize the experience as a negative reflection of who they are and see themselves as incapable of succeeding in school (Jordon, Lara, & McPartland, 1996).

The following example illustrates how a cause-and-effect deficit results in negative interactions:

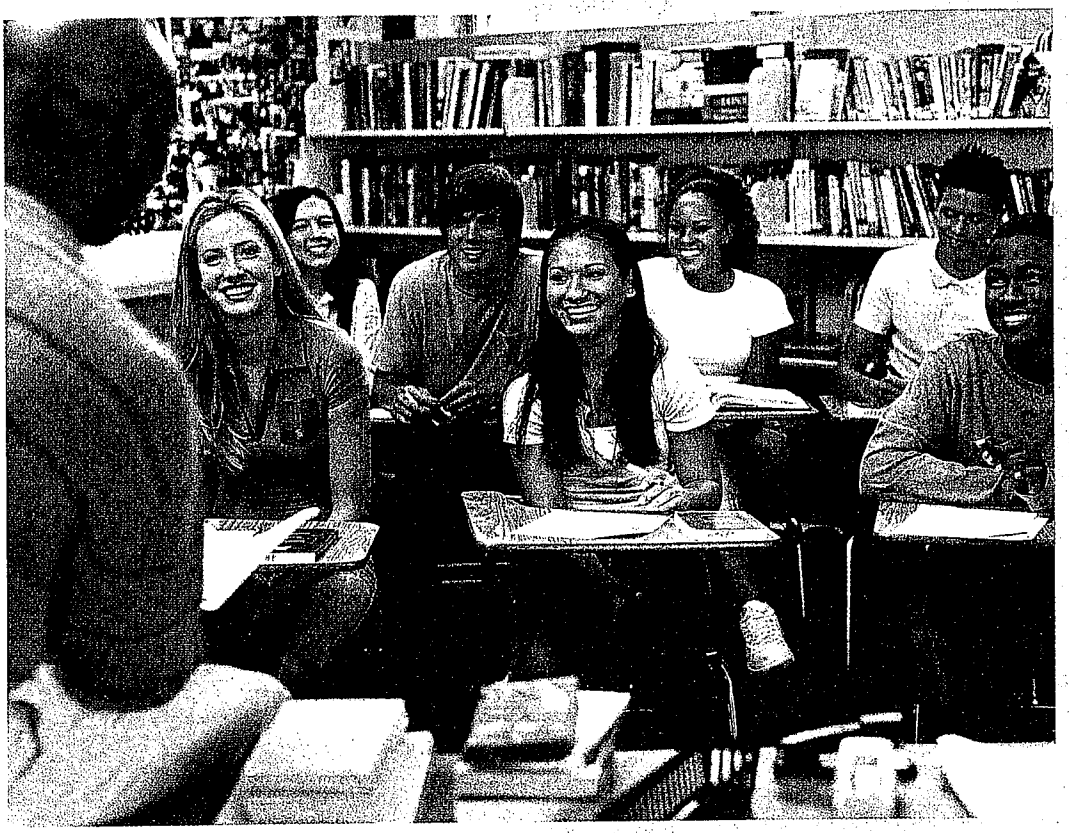
> Jake has chronic attendance problems. He comes to school after another three-day absence and enters the classroom 10 minutes after the teacher has started class. He saunters up to the teacher to give her his tardy slip. On the way to his seat, he greets a few classmates and finally settles into his desk.
>
> Once the assignment is given, Jake becomes frustrated by his inability to do the work. After observing the teacher helping students who have asked questions, Jake asks the teacher for help.
>
> The teacher, already frustrated by his attendance probmems, missing assignments, and disruption, impatiently tells Jake he must stay after school for help. Jake is embarrassed and frustrated by the teacher's impatience and views coming in after school as punishment. Because Jake minimizes his absences and is unaware of the disruption he created in entering class, he perceives the teacher as unwilling to help *him* although he is willing to help others.
>
> Jake responds by slamming his books on the desk and exclaiming, "This sucks!"

What went wrong?

- Jake does not connect the string of events that led to the teacher's frustration
- He is unaware of how much his behavior differs from that of other students
- He decides that the teacher does not like him and is unfair
- The teacher assumes that Jake knows how inappropriate his actions are and is deliberately disruptive.

Improving Relationships

Feeling connected to others is a basic human need. Relationships develop the sense of belonging and motivation that are essential for student success and engagement. Improving relationships between staff members and students, especially those who are most at-risk, should be an essential component of any school improvement plan.


STOCK PHOTO IMAGE

Improved relationships start with a climate of respect and compassion. Principals can provide the vision and leadership for a school in which no student is ever harmed, physically or emotionally, by any adult. Principals can set the tone and expectation for positive student-teacher relationships through the following actions:

- Adopt zero-tolerance for invalidating language
- Insist that all school personnel model behavior that recognizes the worth and potential of every human being
- Ensure the constant, intentional focus on the quality of student–staff member interaction
- Include relationships with students as part of staff evaluations
- Explicitly connect all disciplinary consequences to the series of behaviors that led to the disciplinary action
- Provide structures that connect each student to at least one caring adult in the school.

Teachers can establish positive relationships with students by relating to them as individuals and taking time to listen to their experiences and interests (Louis & Smith, 1996). Following are suggestions for personalizing the learning environment and improving relationships:

- Greet students by name and with a smile as they enter the classroom
- Develop activities to reveal the personal interests of each student and use their interests in conversation with students
- Acknowledge and celebrate successes of all students, no matter how small
- Recognize mistakes as steps in the learning process rather than as terminal events
- Take time to explicitly teach behavioral expectations for each classroom.

A more focused approach may be needed for teachers who are easily frustrated by challenging students. These teachers need support, encouragement, and staff development that includes coaching and role-playing in potentially difficult situations to develop a repertoire of responses. These teachers must be reminded that how they treat students is just as important as the curriculum they teach.

Preventing Dropouts

No program or strategy for dropout reduction is powerful enough to overcome poor relationships. Understanding what damages relationships is imperative. If educators can create a positive environment for every potential dropout, school will become something students look forward to, rather than a place they want to avoid. Such an environment can only be created through positive, caring relationships between students and staff members, one student at a time.

Finally, we must all be mindful that students will not remember everything we teach them, but they will always remember how we treated them. How do you want students to remember your school? PL

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Article

Students At Risk for School Dropout: Are There Gender Differences Among Personal, Family, and School Factors?

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Abstract: *The aims of this study were to determine, using a sample of 3,359 high school students, whether gender is a predictor of the dropout risk and whether the interaction between gender and personal, family, and school-related factors contributed to increasing the dropout risk. Results indicate that boys are at higher odds of dropping out than girls. Moreover, all factors evaluated and their interaction with gender significantly increased the dropout risk. Logistic regressions indicate the odds that boys will drop out are higher on family functioning and negative attitudes towards teachers, the two strongest predictors of dropout risk, while the odds that girls will dropout increased as a function of behavior problems, academic achievement, and commitment to school.*

In 2000, nearly one out of five Quebec high school students (18%) dropped out of school before obtaining a high school diploma or its equivalent (Ministry of Education of Québec, 2004). This national cohort rate reflects the proportion of the school-age population not enrolled in school and having not yet obtained a high school diploma by the age of 20. According to the statistics compiled by the Ministry of Education of Quebec (MEQ), nearly twice as many boys (23.6%) than girls (13%) opted to leave school prematurely. Bowlby and McMullen (2002) reported that the situation in Quebec is comparable to that of other Canadian provinces: In 1999, more boys (15%) than girls (9%) dropped out of school prior to graduation and had not yet obtained their diploma at age 20. Using the data from the National Center for Educational Statistics detailing the results from the 1998 population survey in the United States of America, Kaufman, Kwon, and Klein (2000) evaluated that 5% more boys than girls dropped out of school.

The high dropout rate represents an indicator of a complex social problem as the consequences related to dropping out of school prior to graduation are becoming increasingly severe over the years. On one level, dropping out of school may affect the individual psychologically, leading to social misadaptation and delinquency (James & Lawlor, 2001; Devlin, 1997). On another level, having not yet acquired the competencies needed to integrate into the workforce, the dropout may have difficulty finding a job and remaining gainfully employed. The MEQ (2002) reported that since 1990 there has been a significant decrease in the number of jobs available to individuals who do not possess a high school diploma; therefore, it was more difficult for a high school dropout in 2002 to find work than it was for someone who dropped out in 1990. Moreover, Statistique Canada (2003) reported an unemployment rate twice as high for dropouts compared with the national average (7%). More specifically, in January 2003, Statistique Canada estimated that 14.3% of boys and 13.3% of girls who had not acquired a high school diploma were unemployed.

When looking at Canadian and American national statistics pertaining to the number of students who have dropped out of high school, boys represent a greater percentage than girls (Bowlby & McMullen, 2002; Kaufman et al., 2000). Are there gender differences in the risk of dropping out?

Results of studies evaluating students who are still in school and who might be at risk of dropping out showed a different situation. In Canada, Gélinas et al. (2000) reported that there was no significant difference in the dropout risk level between the 206 boys and 177 girls evaluated during their first year of high school (aged between 11 and 14). Gender was not a predictive variable associated with dropping out of high school. A similar conclusion was reached by Ripple and Luthar (2000) who led a three-year study with 134 students ranging in age between 13 and 18 years. Through univariate associations, these researchers did find that boys demonstrated more behavior problems in the classroom setting and that they were more likely to leave school prematurely than girls; however, through multivariate analyses, gender no longer demonstrated its predictive power. Everett (1997) conducted a study on the social and academic factors linked with perseverance which yielded results supporting the conclusion that gender did not influence the dropout risk level. Finally, Janosz, LeBlanc, Boulerice, and Tremblay (1997) evaluated two independent cohorts composed of French-Canadian students in 1974 (438

boys and 353 girls) and in 1985 (367 boys and 424 girls) and found, through logistic regressions, that gender did not affect the risk level.

Two studies assessing children in primary school led researchers to conclude that boys were at greater risk of dropping out of school than girls. This finding was supported by Lipsey and Derzon (1998) who conducted a meta-analysis pertaining to risk factors linked to school dropout for both primary and secondary school populations. According to these authors, being a boy was only predictive of high school dropout when evaluated at the primary school level. Results from a study evaluating 790 students over a period of 14 years starting in first grade in Baltimore schools allowed Alexander, Entwisle, and Horsey (1997) to reach the same conclusion.

Analyzing the data from the longitudinal study, High School and Beyond (HSB), McNeal (1997) reached the conclusion that gender did have significant predictive power for the dropout status of students. According to McNeal, boys were less likely than girls to drop out of high school after having statistically controlled for academic achievement. Goldschmidt and Wang (1999) analyzed the data from the National Educational Longitudinal Study (NELS). According to the results obtained from hierarchical logistic regression analyses, girls were at higher risk for dropping out of high school than boys. Both of these studies were conducted using large nationally representative high school samples (25,000 students for the NELS; 17,424 students for the HSB). Results from a prospective longitudinal study conducted by Battin-Pearson et al. (2000), aimed at comparing and contrasting five theories of early high school dropout, outlined gender differences in the dropout process which tend to support the results obtained by McNeal (1997). The researchers evaluated 808 students and found that boys demonstrated a significantly lower academic achievement than girls, which was in turn associated with a higher risk of dropping out of school prior to 10th grade. However, when academic achievement was controlled, girls were at higher risk of dropping out of school than boys.

Based on the statistics published by the MEQ (2004) and Statistique Canada (2003), it appears that more boys than girls drop out of high schools in Quebec and across Canada. However, when the risk was evaluated in high school, girls seemed to be equally, if not more, at risk of dropping out than boys. In order to prevent students from dropping out of school, it may be relevant to evaluate the factors which may contribute to altering the risk level by gender. The dependent variable evaluated in the studies reviewed thus far was the risk of dropping out, a variable which often cumulates and confounds all types of risk factors. It thus seems pertinent to further scrutinize the factors which may contribute to the global risk score, including personal, family, and school-related risk factors.

Among the personal factors most often associated with high school dropout are internalized (depression and anxiety) and externalized (aggression and delinquency) behavior problems. Results from a study conducted by Fortin, Royer, Potvin, and Marcotte (2001) demonstrated that compared with non at-risk students, at-risk students showed less adequate interactions with others and more sadness, helplessness, self-depreciation, and social isolation. Further analyses by Fortin, Royer, Potvin, Marcotte, and Yergeau (in press) on the same sample indicated that both boys and girls who were at risk rated significantly higher on the depression scale and demonstrated more antisocial behavior and delinquency than non at-risk students. Results obtained by Marcotte, Fortin, Royer, Potvin, and Leclerc (2001) showed that girls obtained a higher score than boys on internalized behavior problems while boys scored higher on externalized behavior problems. Supporting the findings of Marcotte et al. (2001), James and Lawlor (2001) found that internalized behavior problems were more prevalent in girls. However, there was no significant difference between boys' and girls' scores on the externalized behavior scale as a whole, although girls demonstrated less delinquency than did boys. Janosz, LeBlanc, Boulerice, and Tremblay (2000) found that delinquency was a better predictor for boys than girls.

Results obtained from longitudinal studies where students were first evaluated in primary school seemed to indicate that behavior problems in primary school were strongly related to dropping out of high school. Indeed, Ensminger and Slusarcick (1992) found that pupils who showed more behavior problems, more specifically aggression, were at higher risk of dropping out than were other pupils, and girls were less likely to drop out of school than boys because they were less aggressive and obtained higher achievement test scores than boys. Moreover, as a result of their 19-year study of a cohort of 143 at-risk students, Jimerson, Egeland, Sroufe, and Carlson (2000) demonstrated that among several variables found to be significantly associated with prematurely dropping out of high school, the severity of the pupils' behavior problems in sixth grade was the strongest predictor of the students' dropout status. Although these researchers also determined that gender was significantly associated with dropping out of high school, they did not specify who, of boys or girls, were at highest risk of leaving school without a diploma.

In terms of family risk factors, family structure and parenting practices are the two factors most often associated with high school dropout. Results from studies analyzing the relationship between family structure and school dropout seemed to indicate that coming from a single parent family placed the student at higher risk of leaving school prior to graduation (Alexander et al., 1997; Ekstrom, Goertz, Pollack, & Rock, 1986; Rumberger, 1995; Violette, 1991). Rumberger (1995) found that students who lived in a single parent home were at higher risk of dropping out of school and were more likely to have repeated a grade than were students living with two parents. Findings from a study conducted by Violette (1991) supported those of Rumberger (1995) and suggested that not only were students from single parent homes at higher risk of dropping out than other students, but they were also more likely to come from families earning a low income, displaying low parental schooling, and having the example of a sibling who had dropped out of school. In addition to the variables described by Violette, Ekstrom et al. (1986) found that parents having low educational expectations for their children placed them at higher risk of dropping out. In the study by Alexander et al. (1997), similar findings were also obtained, although these researchers also found that single parents raising large families placed the child at high risk of dropping out due to the combination of risk factors in such a context. Although some researchers did consider gender in their analyses (Ekstrom et al., 1986), no results were reported pertaining to the interaction between family structure and gender.

In researching the relationship between parenting practices and school dropout, Fortin et al. (2001) found that, compared to non at-risk students, at-risk students reported more conflicts and less cohesion within the family, did not receive as much support and encouragement from their parents, nor did they show their emotions to or receive encouragement from other family members. Fortin et al.'s (in press) findings demonstrate that at-risk girls and boys perceive little cohesion within their families. Moreover, problems related to family life organization are reported as a predictive factor of school dropout for girls, while conflicts within the family and low parental affective support are predictive factors for boys. Potvin et al. (1999) found that the family factor most strongly associated with the risk of dropping out of school was parental affective support. Other associated factors included parental supervision and communication between parents and teachers. Results also showed that boys who had less affective support, less parental involvement, and less supervision were more likely to drop out than other boys while girls were more sensitive to parental involvement, supervision, affective support, and communication.

Apart from student behavior, which has already been discussed as a personal factor, school-related factors most often associated with dropping out of school are academic achievement, grade retention, and school experiences, including student-teacher relationships and classroom and school climates. Through quantitative analyses of the NELS data, Rumberger (1995) found that girls and boys were equally at risk of dropping out. However, when attitudes, behaviors, and academic achievement are statistically controlled, girls who exhibit the same (low) academic achievement as boys were at higher risk of dropping out of school than are boys. Similar findings were obtained by Battin-Pearson et al. (2000) who also found that academic achievement was a mediating factor in the dropout process and explained, in and of itself, 33% of the variance associated with dropping out of school.

Rumberger's (1995) analyses demonstrated that grade retention was the single most powerful predictor of high school dropout, a finding which was also obtained by Jimerson, Ferguson, Whipple, Anderson, and Dalton (2002) and Janosz et al. (1997), who specified that results from their study showed grade retention as a better predictor for girls than boys. Analyzing the data from the NELS, Goldschmidt and Wang (1999) determined that students who had been retained by the eighth grade were 3.8 times more likely to drop out of school than students who had not been retained while students who had been retained by the 10th grade were 2.4 times more likely to drop out of school than their nonretained peers. Goldschmidt and Wang noted that 45% of the students who had dropped out were 18 years old and should have completed their schooling before having reached that age. Ripple and Luthar (2000) determined that being older than others in their cohort, a consequence of grade retention, put the students at greater risk of dropping out than other students who had not been retained. The only reference made to analyses pertaining to the interaction between gender and grade retention was brought forth by Janosz et al. (1997).

Experiences that students have in school, with regards to their relationships with teachers and other students in the classroom and in the school, also appeared to be associated with their graduation status. In measuring the attitudes students held towards their teacher, Rumberger (1995) found that students who perceived their teachers positively were 16% less likely to drop out than those students whose perceptions towards their teacher were negative. Fortin et al. (2001) found that students who were at risk of dropping out perceived less teacher support and little order or organization in the classroom. Fortin et al. (in press) also found that boys were more sensitive to school factors, more specifically negative attitudes towards the teacher, than were girls. In a study focusing on adolescent school experiences, Kasen, Cohen, and Brook (1998) found that schools emphasizing high levels of competence and fostering positive attitudes towards learning in the student body tended to have better social climates and lower levels of maladjustment. Moreover, they found that girls who attended schools where there were high levels of conflict were at greater risk of involvement in problematic behaviors, such as pregnancy and alcohol abuse, than were boys. Finally, results obtained by Battin-Pearson et al. (2000) showed that both low school bonding and bonding to antisocial peers were significantly associated with low academic achievement and contributed to increasing the risk of dropping out of school prior to 10th grade.

In summary, although many studies have focused on high school dropout, few have focused on gender differences. In terms of personal factors, results seem to indicate that boys were at higher risk of dropping out of school because of their externalized behavior problems while girls were at higher risk than boys due to internalized behavior problems. In terms of family factors, the risk of dropping out seemed to increase when boys or girls lived in a single parent home or in a home where there was little cohesion, supervision, communication and affective support, and many conflicts. In terms of school-related factors, results showed that academic achievement was a strong predictor of the dropout status, as was grade retention. Girls generally achieved better grades in school than did boys; however, when academic achievement was statistically controlled, girls were at higher risk of dropping out of school than boys. Furthermore, results showed that girls were more sensitive to grade retention than boys. Finally, the student's commitment, attitudes towards the teacher, and perceptions of the school and classroom climates seemed to be related to the risk of dropping out, with boys being more sensitive to school-related factors than girls.

The purpose of the study was twofold: The study aimed first to determine who, of boys or girls, were most at risk of dropping out of high school and second, to compare risk factors associated with dropping out in order to determine the extent to which these factors, and their interaction with gender, contributed to increasing the risk of dropping out of school prior to graduation. More specifically, this study aimed to compare boys and girls on personal, family, and school-related factors and to verify the strength of the relationship between these factors and the dropout risk according to gender.

Method

Participants

This descriptive-correlational study was conducted using a population of high school students from the Eastern Townships in Quebec. The sample was composed of 3,359 eighth grade students (1,696 boys and 1,663 girls) who participated in the first year of a larger, longitudinal study conducted by Fortin (2002) on school

achievement. All students enrolled in eighth grade in 2002 in the 18 schools belonging to four different school boards were systematically offered the opportunity to participate in the study. One thousand and ten students refused to participate. Students recruited were 13 to17 years of age (F = 15) at the time of the first evaluation. From this sample, two groups were formed based on the scores obtained on the *Decisions* measure of dropout risk (Quirouette, 1988): 1,348 were at-risk students (40% of the sample) and 2,011 were not at-risk students (60% of the sample). Four schools were located in an urban setting considered as underprivileged (MEQ, 2004). All other schools were located in semi-urban or rural areas.

Measures

Six instruments were used in this study in addition to the academic achievement (cumulative year-end average), which was obtained for each student in mathematics and either French or English, depending on the language of instruction used in each school. The measure used to evaluate the risk of dropping out of school was *Decisions* (Quirouette, 1988). Composed of 39 questions, this questionnaire covers six risk dimensions: (1) family environment, (2) personal characteristics, (3) school plans, (4) academic abilities, (5) student-teacher relationship, and (6) school motivation. In order to determine the instrument's psychometric properties, Quirouette (1988) conducted test/retest procedures yielding a reliability correlation coefficient of .90 at time 1, .92 at time 2, and .93 at time 3. The Cronbach's alpha coefficient was found to vary from .85 to .90 for the set of six scales, substantiating the instrument's internal consistency.

The *Family Assessment Device* (FAD), (Epstein, Connors, & Salinas, 1983) is composed of 60 questions forming several scales measuring the social and environmental characteristics of the family. One of the scales represents the overall family functioning. As this is a self-reported measure, the questionnaire evaluates the student's perception of how the family is functioning. This scale is comprised of 12 items, six of which outline a positive family functioning while six evaluate deficient family functioning. For each statement, the student selects one answer from a four-point Likert-type scale ranging from "I totally agree" to "I totally disagree." The psychometric properties for this scale indicate an internal consistency of .86 (Chronbach's alpha) and a test/re-test reliability between .66 and .76.

The *Classroom Environmental Scale* (CES), (Moos & Trickett, 1987), measures the classroom social climate with scales focusing on student commitment, affiliation to other students, perceived teacher support, appropriateness of the task, competition with other students, order and organization in the classroom, understanding of the rules, and finally, teacher control and innovation. Each scale consists of five statements (total of 45 statements) for which the student responds either true or false. The CES shows adequate reliability (Cronbach's alpha between .52 and .75) and concurrent validity with other instruments (r between .16 and .40).

The *Child Behavior Checklist* (CBCL), (Achenbach, 1991), built for children aged four to 18, aims to evaluate problematic behavior such as externalized (aggressive behavior and delinquency) and internalized (anxiety, depression, withdrawal) behavior problems. For each of the 113 questions, the student chooses an answer on a three-point Likert-type scale. The internal validity for this measure has been evaluated at .95 for the behavior problems scales and at .99 for the social competence scale. Its test/re-test reliability ranges from .84 to .97 for behavior problems and social competence, respectively.

The *Behavior Assessment Scale for Children* (BASC), (Reynolds & Kamphaus, 1992) measures the student's adaptative and problematic behavior using 130 questions composing 12 scales. Its psychometric properties are strong for internal and content validity and test/re-test reliability. In the context of this study, two scales were used, namely, the student's attitude towards the teacher and his or her attitude towards the school. The scales represent a total of 19 questions to which the student answers by true or false. The student is considered at risk on either scale if his or her score reaches six or more. The reliability for these two scales is good (Cronbach's alpha between .81 and .87).

The *Beck Depression Index* (BDI), (Beck, 1978) is a self-reported measure composed of 21 statements assessing the intensity of emotional, behavioral, cognitive, and somatic symptoms characteristic of depression. For each statement, the student chooses from a choice of four answers, from 0 to 3. The psychometric qualities of the BDI have been confirmed for Quebec adolescents, with internal consistency coefficients ranging from .86 to .88.

Procedure

After having been informed of the purpose of the study by the school principal, students received the written description of the research project and the consent form to be signed by willing participants and their parents. Students who did not agree or whose parents did not allow participation in the study were asked to leave the classroom when the evaluation took place. The students who agreed to participate answered the questionnaires in their classrooms during a 90-minute period of class time, supervised by trained research assistants. Data collection occurred during the spring of 2002. All questionnaires were administered in the students' language of instruction (French or English) and in the same order.

Results

This study aimed to compare boys and girls on personal, family, and school-related factors and to verify whether these factors are associated with the risk of dropping out of school prior to graduation according to gender. Descriptive statistics indicate that of the 3,359 students participating in the study, 1,348 (40.1%) were at risk including 745 boys (55.2%) and 603 girls (44.7%). The odds of dropping out for boys was 0.8, while the odds for girls was 0.57. The odds ratio was 1.396 (X^2 = 25.337, p < .000). In this cohort of Canadian adolescents, boys are at higher risk of dropping out of school prematurely than girls.

The first step to explain such an odds ratio was to compare girls and boys on several risk factors. Results obtained from independent sample t-tests (Table 1) indicate differences on personal, family, and school-related risk factors. More specifically, significant differences were found for externalized behavior problems (t = -3.824), depression (t = 3.654), attitudes towards the teacher (t = -5.614), and academic achievement (Mathematics: t = 15.551; French/English: t = 16.628). Boys reported more externalized behavior problems, less depression, more negative attitudes towards the teacher, and an overall

Table 1

Average scores obtained b;y boys and girls on personal, family, and school-related factors.

	Girls (means)	Boys (means)	t-test
Externalized behavior problems	12.7377	13.7556	-3.824***
Depression	10.31	9.25	3.654***
Family functioning	1.9551	1.9836	-1.643
Negative attitudes towards the teacher	2.7340	3.2184	-5.614***
Commitment	1.88	1.85	.691
Mathematics cumulative average (%)	72.4	70.35	4.197***
French or English (mother-tongue) (%)	72.7	66.7	16.628***

*** $p < .000$

lower academic achievement than did girls. No statistical difference was found for family functioning or commitment to school.

Further analyses were performed in order to determine whether the independent variables, appearing in Table 1, were indeed predictors of the risk of dropping out of school (dependent variable) and whether the relationship between these variables was different when considering gender. A logistic regression was performed including gender in the first block; externalized behavior problems, depression, family functioning, attitude towards the teacher, and academic achievement in the second; and the interaction between gender and other independent variables in the third block. Results from the logistic regression (Table 2) confirm that there is a significant relationship between gender and the risk of dropping out of school (X^2 = 20.573, $p < .000$, Nagelkerke R^2 = .008).

The second block of the logistic regression, which included all personal, family, and school-related risk factors showed a significant increase in the risk (X^2 = 1372.160, $p < .000$, Nagelkerke R^2 = .459). Moreover, each individual variable was also found to be significantly related to the risk of dropping out of school. The third block of the regression was added to test the interaction, which may or may not exist between gender and other independent variables. The chi-square change associated with this block was shown to be significant (X^2 = 15.486, $p < .05$, Nagelkerke R^2 = .463). Individual interaction terms suggest that depression and the student's attitude towards the teacher may be variables which interact more with gender.

The results obtained in the logistic regression led us to perform separate logistic regressions for boys and girls, using the same independent variables. Results comparing the logistic regression coefficients and the odds ratios pertaining to the dropout risk for girls and boys on the seven independent variables (see Table 3) indicate that all variables are statistically significant for girls and boys. When comparing results obtained for girls and boys on each variable, findings show that although there are statistically significant gender differences, the differences on each variable were very slim. Negative family functioning and a negative attitude towards teachers seem to be variables which contribute to an increase in the odds of dropping out for boys, while depression, externalized behavior problems, lack of commitment, and poor academic performance increased the odds that the girls will drop out, but only by very small fractions of points.

In summary, gender is a predictor for the risk of dropping out of school, and boys are at higher risk than girls. All independent variables measured were found to be significant predictors of the risk of dropping out and their interaction with gender was also significant. More specifically, boys report more externalized behavior problems, less depression, and a more negative attitude towards teachers and show a lower academic achievement than do girls. Results also seem to indicate that the odds that a boy will drop out increase as his perception of family functioning and his attitude towards the teacher become more negative whereas the odds that a girl will drop out increase as she becomes more depressed and less committed to school and as she presents more externalized behavior problems and lower academic achievement. These findings can be explained in part by the statistical power obtained with a large sample. Despite the small gender differences found, the same variables seem to influence boys and girls in a similar fashion, suggesting that the models are very much alike.

Discussion

The first aim of this study was to determine who of boys or girls were most at risk of high school dropout. Results from this study indicate that the odds that boys will leave school prematurely are significantly higher than those of girls. These results differ on several points from those reported in the literature as there is a difference found between boys and girls and the boys belonging to this cohort are high school students, not primary school pupils.

There might be several explanations for the differences found, most of which are tied to methodological issues. First, studies having found no statistical difference in the risk level used relatively small samples (Ripple & Luthar, 2000), evaluated the risk in students who were younger than those participating in this study (Gélinas et al.,

Table 2

The influence of gender, personal, family, and school-related factors and their interaction on the dropout risk.

Block	Independent variable	Logistic regression coefficient (*b*)	Wald	Odds ratio (Exp. B)
1	Gender	.332***	24.574	1.393
	X^2 block = 20.573 ($p < .000$) ; $df = 1$; $R^2 = .008$; *** $p < .000$			
2	Externalized behavior problems	.020***	10.395	1.021
	Depression	.046***	54.579	1.047
	Family functioning	1.003***	105.972	2.728
	Commitment	-.225***	33.410	.799
	Negative attitude towards the teacher	.229***	145.401	1.258
	Mathematics	-.031***	54.049	.969
	French / English	-.026***	19.598	.974
	X^2 block = 1372.160 ($p < .000$); $df = 7$; $R^2 = .459$; *** $p < .001$			
3	Gender*Externalized behavior problems	-.007	.265	.993
	Gender*Depression	-.035**	7.627	.966
	Gender*Family functioning	.112	.326	1.119
	Gender*Commitment	-.019	.061	.981
	Gender*Attitude towards the teacher	.096**	6.238	1.101
	Gender*Mathematics	-.006	.515	.994
	Gender*French / English	-.006	.289	.994
	X^2 block = 15.486 ($p < .05$); $df = 7$; $R^2 = .463$; ** $p < .01$			

Table 3

The influence of personal, family, and school-related factors on the dropout risk for boys and girls.

Variables	Girls [a]		Boys [b]	
	Logistic regression coefficients (*b*)	Odds ratio (Exp. B)	Logistic regression coefficients (*b*)	Odds ratio (Exp. B)
Externalized behavior problems	.024	1.025**	.018	1.018**
Depression	.066	1.068***	.031	1.031***
Family functioning	.937	2.551***	1.049	2.854***
Commitment	-.218	.804***	-.237	.789***
Negative attitude towards the teacher	.178	1.195***	.274	1.316***
Mathematics	-.028	.973***	-.034	.967***
French / English	-.024	.976***	-.030	.970***

a: $X^2 = 668.882$ ($p < .000$) ; $df = 7$; $R^2 = .454$; *** $p < .000$, ** $p < .05$
b: $X^2 = 718.825$ ($p < .000$) ; $df = 7$; $R^2 = .463$; *** $p < .000$, ** $p < .05$

2000), and finally might have used different tools to measure the risk level. Second, two studies found gender differences only in primary school pupils (Alexander et al., 1997; Lipsey & Derzon, 2000). As our study was limited to high school, it cannot extrapolate and determine whether boys who were at risk in high school were also at risk in primary school. Finally, studies, which found girls to be at higher risk of dropping out, evaluated large American high school populations (Goldschmidt & Wang, 1999), and some studies had statistically controlled for academic achievement (Battin-Pearson et al., 2000; McNeal, 1997). This study was conducted using a sample of Canadian students. There might exist fundamental differences between American and Canadian youth or between American and Canadian institutions (family and school), which could contribute to this difference, although differences in the tools used to assess the risk are more likely.

The second aim of this study was to determine if the independent variables contributed to increasing the high school dropout risk and whether the interaction between gender and other independent variables contributed to increasing the odds of dropping out of school. Results obtained generally support the findings of studies having assessed the personal (externalized behavior problems and depression), family (functioning), and school-related (academic achievement, commitment, and attitude towards the teacher) predictors of the dropout risk. In terms of personal risk factors, results from the t-tests show that boys scored significantly higher than did girls on externalized behavior problems while girls scored significantly higher than boys on the depression scale, results which support both those of Marcotte et al. (2001) and of Fortin et al. (2001). When externalized behavior problems and depression were entered into the logistic regression, both variables were found to contribute to an increase in the risk of dropping out of high school. As the logistic regression model including the interaction of gender and both of these variables were statistically significant, separate logistic regressions were conducted for girls and boys. Results show that both of these variables increase the odds that both boys and girls will drop out, although the odds ratio is slightly higher for girls on both variables.

The scores obtained by girls and boys on the global family functioning was initially not found to be statistically significant in the t-tests. However, this family variable was found not only to be a predictor of the dropout risk, but was also the strongest predictor in the second and third blocks of the logistic regression. The separate logistic regressions conducted for boys and girls showed that (negative) family functioning placed the boys at higher odds of dropping out than it did girls and was still the strongest predictor. Family functioning included elements of decision making and problem solving within the family, affective support, acceptance of family members and the ability to talk about feelings and to get along with other family members. These findings tend to support those of Fortin et al. (2001) and those of Potvin et al. (1999), although the global family functioning scale is not as specific as each of the subscales used by these authors.

Of the school-related factors initially evaluated in the t-tests, only the gender difference pertaining to commitment was not found to be statistically significant. However, results from the logistic regressions demonstrate that the lack of commitment does contribute to increasing the risk of dropping out and the interaction between gender and commitment was also found to contribute to an increase in the dropout risk. Further analyses by gender showed that the odds that girls will drop out increase slightly more than those of boys as their commitment to school decreases. Although Battin-Pearson et al. (2000) had not distinguished between boys and girls, they had also found that low school bonding does increase the likelihood that a student will drop out of school prior to 10th grade. This team had also found that boys had lower academic achievement than girls, a finding which is supported by our research. In the cohort evaluated, girls displayed a higher academic (2% to 6% higher) achievement than did boys, at a statistically significant level. Academic achievement, as a variable included in the logistic regression, was also found to influence the dropout risk, the risk increasing as the academic achievement decreased. Lower performance in mathematics and French/English increased the odds that girls will drop out. Finally, boys obtained higher scores than did girls on the negative attitudes towards the teacher scale. The negative attitudes towards the teacher and its interaction with gender were found to be a significant predictor of the dropout risk in both the second and third blocks of the logistic regression. Results obtained on the separate logistic regressions for boys and girls indicate that the odds that boys with negative attitudes will drop out are higher than those of girls with similar attitudes. This tends to support the results obtained by Rumberger (1995).

These findings are interesting on several levels. First, gender does contribute to increasing the risk of dropping out of school, as do global negative family functioning, externalized behavior problems, depression, low commitment to school, negative attitudes towards the teacher, and low academic achievement. Second, the odds that boys will drop out of school are higher than the odds that girls will drop out prematurely. Results from separate logistic regressions for boys and girls indicate that the variables which seem to contribute to an increase in the odds for boys are, in order of importance, negative family functioning, negative attitude towards the teacher, depression, externalized behavior problems, low academic achievement, and low commitment to school. The odds that girls will drop out, although globally lower than the boys', were higher than the boys on all variables except for negative family functioning and negative attitudes towards the teacher. Third, although researchers found that school variables might be the most significant predictors of school dropout (Battin-Pearson et al., 2000; Janosz et al., 1997), our results show that negative family functioning is the strongest predictor for both boys and girls, but contributes to increasing the odds that boys will drop out to a greater extent than it did the odds that girls would leave school prematurely. Boys who perceive negative attitudes towards teachers are also at higher odds of dropping out of school than other students. These two findings may suggest that when boys foster negative perceptions towards adults in the home and at school, they become at higher risk of dropping out of school. Whether negative perceptions lead to a decrease in academic achievement and consequently to a lack of commitment to school is beyond the scope of this study. However, these findings may generate a target for dropout prevention

in helping at-risk boys to establish and maintain good relationships with significant adults in their lives.

There are limitations to this study. The first limitation refers to the cross-sectional research design of the study which does not allow for the comparison of the risk across time, a variable which might fluctuate with time. As students were evaluated in their second year of their secondary education (eighth grade), with three years remaining before graduation, the risk that they will drop out might increase as their studies become more demanding and their motivation decreases. Another important factor is also the legal obligation to attend school up to 16 years of age. As more students reach that age, the risk that they will leave the school context might increase, particularly for those students who were retained. Another limitation pertains precisely to the inability to assess whether or not students had been retained in school, a variable which might in turn influence the students' commitment to school.

Conclusion

Little research to date has focused specifically on gender differences in the dropout process. The purpose of this study was to determine whether there are gender differences associated with the high school dropout risk. The findings show that the odds that boys will drop out of school prematurely are significantly higher than those of girls. When the risk factors were evaluated to determine if they contributed to increasing the odds of the dropout risk, they were all found to be significant predictors. Moreover, the interaction between independent variables and gender also contributed to an increase in the dropout risk. Why are the odds that boys will drop out higher than those of girls?

The results from the logistic regression show that the two most significant predictors of high school dropout are negative family functioning and negative attitudes towards the teacher. The results from the separate logistic regressions performed for boys and girls demonstrate that the largest difference in the odds ratios between boys and girls are found for both of these variables, with boys scoring significantly higher than girls. In essence, boys' negative perceptions of their relationships with adults in the home and the school settings may contribute to placing them at significantly higher odds of dropping out. The odds that girls will drop out, on the other hand, are affected by both internalized and externalized behavior problems, academic achievement, and commitment. As behavior problems increase and academic achievement and commitment decrease, the odds that girls will drop out increase.

Although this study brings forth some differences between boys and girls and confirms differences obtained in previous research pertaining to specific predictors, there is still a portion of the equation which remains unknown. All factors evaluated seem to be good predictors for boys and girls. This suggests that the theoretical framework underlying the dropout process may be the same for boys and girls, but might also need to be broadened to include other variables. As more boys are placed at risk of dropping out of school and as more of them in fact do drop out, research will need to address why this happens in order to provide practitioners with accurate targets for focused prevention programs.

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Drop-Out Prevention Among Urban, African American Adolescents: Program Evaluation and Practical Implications

CHERYL L. SOMERS AND MONTE PILIAWSKY

ABSTRACT: The purposes of this study were to evaluate a pilot, drop-out prevention program designed to provide academic tutoring and supplemental enrichment to 9th graders and to examine additional data on adolescents' motivators and role models related to high school drop-out and completion. The program targeted 9th graders because many adolescents decide to drop out of high school at age 16, which occurs for most in the 10th grade. Students were from a major city in the midwest, and were 99% African American and of lower socioeconomic levels. The findings indicated that students appeared to benefit from the opportunity to develop close relations with adult tutors who cared about their success. The dropout rate for students in this program was much lower than that of 9th graders in that high school who were not in the program, as well as for 9th graders in the entire school district. Developmental transitions, particularly that into high school, are prominent issues about which educators should be concerned. Finally, the authors discuss practical implications for designing academic intervention and supplemental enrichment programs.

Key Words: adolescents, at-risk, drop out, prevention

There is growing interest in factors that predict and prevent student underachievement and that often result in students avoiding or actually dropping out of school. Researchers have shown that youth exposed to several risk factors simultaneously tend to experience learning or behavioral problems (Luster & McAdoo, 1994). These risk factors include living in poverty, larger family size, low levels of family support, and lower levels of maternal intelligence, self-esteem, and education. In an extensive review of predictors of underachievement in urban children, confirmed by experts and practitioners, Arroyo, Rhoad, and Drew (1999) identified the following variables as the 10 most strongly associated with underachievement in urban settings (presented not in order of strength but in order of likelihood of school having an influence on change): teachers' demonstrations of caring, respect, and interest in children's growth, teacher expectations for children's achievement, curriculum relevance, class size, disengagement from school-related activities, students' own confidence in their abilities to achieve, high mobility in school attendance, parental expectations and involvement,

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level of parents' education, and poverty or low income. Other researchers have found that youth who had stable relationships with deviant peers tended to show an increase in behavior problems (Berndt, Hawkins, & Jiao, 1999). Thus, these at-risk youth need to be identified and provided intervention. Although intervention efforts have focused on developing and implementing programs to enhance students' academic performance, not all of them have met with success.

Academic tutoring is one way that at-risk adolescents can obtain assistance to improve their academic functioning. Researchers have shown that before- and after-school tutoring programs improve academic success by helping students with actual class assignments and teaching various strategies that students can generalize to other academic problems (Hock, Pulvers, Deshler, & Schumaker, 2001). The concept of academic tutoring has been applied to all ages, ranging from elementary school to postbaccalaureate education. In most instances, students who attended frequent sessions of tutoring had positive outcomes. For instance, Wasik and Slavin (1990) reported results of research that evaluated the effects of five primary grade reading programs. They found that one-to-one tutoring had positive effects on students' reading achievement in two of the programs, and had positive short-term effects in another. In a related study, Dennison (2000) implemented a program called Big Buddies to provide tutoring/mentoring for third and fourth graders by 11th and 12th grade honor students. Effects were positive, though not statistically significant, on self-esteem, attitudes toward school, and on-task classroom behavior. However, the majority of the elementary school students increased their skill levels by one grade level in the area in which they received tutoring.

In a study with direct implications for urban youth, Ginsburg-Block and Fantuzzo (1997) found that African American elementary school students highly benefited by reciprocal peer tutoring (RPT). RPT produced higher rates of mathematics achievement, more positive self-report of social acceptance, behavioral/conduct, and observed teacher and student task-related behavior. Schinke, Cole, and Poulin (2000) showed that students' discussions with adults, along with specific other academic/cognitive tasks, were related to higher grades in major subject areas. Individual help from others has also been shown to help college-level students. A study of second- and third-year medical students revealed that regular and frequent meetings with tutors, as well as other social and academic involvement, were related to academic success (Malik, 2000).

In looking more closely at the issue of drop-out prevention, researchers have shown that school variables that include achievement, grade retention, and school commitment are the strongest predictors in two longitudinal samples of school dropout (Janosz, LeBlanc, Boulerice, & Tremblay, 1997). According to Janosz et al. other family, behavioral, social, and personality variables did not add significant power to predict who is likely to dropout of school. Given the importance of academic performance and positive socialization on adolescent development, it would seem then, that efforts might be useful in preventing high school dropout.

To date, the majority of studies on dropout have focused mainly on correlates, predictors, and consequences of high school dropout. Fewer studies have looked at tutoring for the purpose of preventing students from dropping out of school. Indeed, Srebnik and Elias (1993) suggested that drop-out prevention programs often focus too much on students' personal characteristics instead of making school attractive and meaningful to students. Peer mentoring and tutoring were indicated as effective methods of accomplishing these overlapping goals. Other researchers have found that alternative middle schools for younger students and GED programs for older students can be effective in drop-out prevention (Dynarski & Gleason, 2002); similarly, Edmondson and White (1998) reported that tutoring was significantly related to fewer dropouts among at-risk adolescents. Fashola and Slavin (1998) reported success in reducing dropout rates by having students participate in a program that allowed bonding between students and teachers, provided academic tutoring, connected students to futures that they viewed as attainable, and gave students an opportunity to be involved in their schools. Similarly, involving parents in academic interventions has also been found to contribute to prevention of school dropout (Seaman & Yoo, 2001) presumably because it creates an opportunity for parents and their children to connect. Intervention programs begun as early as kindergarten (Vitaro, Brendgen, & Tremblay, 1999) and the first grade (Slavin, Karweit, & Wasik, 1990) have been shown to help reduce the rate of later student dropouts.

Researchers have found that other factors relate to decreases in the likelihood of dropout. For example, extracurricular activities can serve as a buffer against school dropout (Mahoney & Cairns, 1997). Some programs, such as the Teen Outreach Program, have produced significant reduction in school failure by engaging students in community service activities (e.g., community volunteer service activities included aiding hospitals and nursing homes, participating in walkathons, peer tutoring, etc., followed by classroom-based discussions of service experiences and social-developmental tasks of adolescence; Allen, Philliber, Herrling, & Kuperminc, 1997). These programs include children who are otherwise marginalized in an enterprise that allows them to express their competencies and abilities. Some schools and community centers have offered an integrated program that include increased self-confidence and self esteem, as well as increased community awareness, and a positive work attitude (Daugherty & Compton, 1996). Increased self-confidence and self-esteem motivated teenagers to stay in school and to work toward academic success. Another program provided potential dropouts with a support system consisting of working in groups to help students develop positive attitudes about themselves. The group experience gave students an opportunity to express their feelings, set goals, and solve problems in a supportive and caring atmosphere (Blum & Jones, 1993).

Drawing upon the accumulated literature, the primary purpose of this pilot study was to provide academic tutoring to at-risk ninth grade adolescents. However, in that interpersonal factors have proven to be helpful, an additional purpose of our study was to provide the students a

personal relationship with a tutor, and also to offer students supplemental enrichment activities to build their academic self-esteem, motivation, and self-efficacy to enable them to achieve academically and complete high school. From this perspective, another major purpose of this pilot study was to examine these adolescents' perceptions of what motivates them to stay in school versus dropout of school, who are their role models, and what are their career goals and life plans.

It has been widely reported that many children experience significant decline in achievement over the preadolescent and adolescent periods, primarily during a critical transition period in adolescent development (e.g., Elmen, 1991; Wigfield, Eccles, Mac Iver, Reuman, & Midgley, 1991; Yoon, Eccles, Wigfield, & Barber, 1996), which further demonstrates the need to provide academic support to at-risk students. The first transition students encounter is in middle school when they leave the single class environment and go to a fast paced multiclassroom environment. This difficulty is magnified in the ninth grade where students confront the life transition of moving from the more personalized classrooms of middle school to a relatively impersonal high school. The large size of the high schools, coupled with departmental teaching and heavy student loads, make it difficult for teachers and students to form close relationships. Accordingly, Entwisle (1990), among others, has found that many adolescents benefit from a less complex and more intimate school structure because it is a secure, predictable, and responsive environment.

There have been various attempts to use one-to-one and classwide academic tutoring to address academic performances. The goal of our school failure and dropout prevention effort was to provide urban students with a more personal academic environment. We sought to increase the number of students who achieve success in their academic and personal lives by staying in school, exploring career opportunities, and recognizing the value of higher education. Specifically, the program offered students at risk for dropout individualized academic and social support—through a collaborative network of students, tutors, parents, and teachers—designed to guide students toward a productive future. We also attempted to give students a supportive and nurturing environment in which appropriate and proactive intervention makes up for gaps in basic skills and builds students' confidence as they set realistic goals and overcome apprehensions about the future.

As impoverished inner-city youngsters approach their teen years, external social factors related to living in poverty inhibit their physical, social, emotional, and intellectual development, resulting in low school achievement (Lipman, 1998; Henig, Hula, Orr, & Pedescleaux, 1999). Additional social factors that undercut academic achievement are responsibility for siblings at home, parents unable to help with school work, and negative peer pressure (Eccles, Midgley, Wigfield, & Buchanan, 1993).

The cumulative impact over time of the social ills, poverty, and declining health can erode students' determination and hope.

The setting for our tutoring program, a midwest city, is nearly the poorest and most racially segregated city in the U.S. Specifically, 91% of students in the city's public schools are African American, with 4% white. Forty-four percent of public school pupils live in poverty, whereas 70% receive school lunches free or at reduced rates. Finally, one-third of students are transient, moving to another school within a year.

In designing the tutoring program, we attempted to take into account the impact of social factors—poverty, racial isolation, one-parent families, family dropout, and peer dropout—on students' academic achievement. Accordingly, we supplemented academic tutoring with a program of personal development, hoping that students would bond with a tutor/mentor, feel good about themselves, and be more hopeful about life's possibilities.

Method

Participants

The beginning group of students who received tutoring consisted of 96 ninth grade public high school students in a major city in the midwest. They were 99% African American and of lower socioeconomic status (SES). In the program evaluation portion of this study, 46 students were in the experimental group (21 boys and 25 girls), and a comparable group of 50 students (25 boys and 25 girls) in the same school was used as a comparison group. An additional 44 students joined the program half-way through, and thus, pretest data were not available. Because this last group only completed the survey at the end of the year, they are included only when we discuss the narrative portion of the data. The students who served as tutors were enrolled at a large urban university in the same city, primarily in teacher education programs. They were primarily African American and in the 18-24 year old age range.

Measures

Educational attitudes and behaviors. In order to target attitudes toward education and completing school versus dropping out, we administered a 20-item questionnaire at both pre- and post-intervention that included the following five subscales: (a) Educational Intentions (3 items, e.g., "I plan to finish high school"); (b) Educational Commitment Behavior (4 items, e.g.,"I am absent a lot from school because I skip my classes"); (c) Social Support for Educational Commitment and Attainment (6 items, e.g., "I have family who motivate me to further my education after high school"); (d) Identification of Financial Value of Education (4 items, e.g., "A high school diploma would help me to get a better paying job than if I quit high school"); and (e) Identification of Personal Value of Education (3 items, e.g., "If I finish high school, I will feel proud of myself"). We created this instrument for the purposes of this research, and put it under pilot testing and modified it based on internal consistency coefficients in preparation for the final version used in this study. Researchers knowledgeable in this area discussed the items written to comprise each construct among and aligned themwith research supporting the role of interpersonal and individual factors in achievement and school retention (see literature review above).

Academic outcomes. We used the grade point average (GPA) as a primary measure of academic performance. In addition, we

compared the dropout rate for students participating in the program to ninth graders in the high school who were not in the program and also ninth graders in the entire school district.

Motivators and role models. We designed an open-ended questionnaire in order to target adolescents' motivations to stay in school and to identify those people who serve as role models. We used adolescent identity development research as the impetus for studying adolescents' role models for their influence on adolescents' own behavioral choices (e.g., Harter, 1999; Ruble, 1983). We modeled the format was modeled after others' similar work (e.g., Dowson & McInerney, 2003; Zirkel, 2002). We reviewed responses from a pilot sample by knowledgeable researchers, and modified them as needed to maximize clarity of questions. We established categories of responses based on the individual responses made by participants. Three researchers independently coded responses and 95% inter-rater reliability was established. We resolved any differences were resolved through discussion.

Procedure

Ninth grade students' participation was voluntary, and both parent consent and adolescent assent were obtained. Most students (both experimental and control, total $n = 96$) completed the survey both at the start of ninth grade (fall 2000) and again at the end of the year (May/June 2001) after the 30-week tutoring program ended. As stated above, 50 of these students served as a control group and thus did not receive the academic tutoring.

The tutoring took place after school in designated school classrooms from 3:15 p.m. to 5:15 p.m. on four afternoons per week. Students typically elected a Monday-Wednesday or a Tuesday-Thursday schedule. They were paired with paid tutors who were university students, primarily from the College of Education, who then adopted the same schedule. The tutors received a 2-hour training session at a local university at the start of the fall semester prior to being assigned to their tutees. Among the topics included in the training were psychosocial development of adolescents, motivation theory, multicultural teaching methods, and working with parents. All students were given a copy of the tutoring manual "Tutoring Handbook" produced by the University of Washington/The Pipeline Project. In addition, throughout the school year, tutors met regularly to discuss "best practices" and to receive formal retraining from professional consultants.

Tutors and students worked on a variety of academic subject areas, as dictated by students' needs. Teachers and tutors passed journals with one another indicating in which subject areas the students needed assistance. Close mentoring relationships appeared to have developed based upon observations made by the project directors and positive comments made by tutors and tutees on surveys. The excellent attendance record maintained by tutees was one sign of successful bonding, as were the regular phone calls at home that tutors reported receiving from their tutees.

The adolescents in the tutoring program also attended monthly enrichment programs designed to enhance academic self-esteem, self-efficacy, and motivation, as well as knowledge of educational and career options. These workshops allowed students to use computer interest inventories to learn about their personalities and interests, and to explore career possibilities. Each student completed a survey assessing their personality traits and career interests based on temperament, abilities, working conditions, education, interest areas, salary requirements, and employment outlook. From this data, a profile of potential professions for which the student might be a good candidate was generated by the personality inventory scoring program. A discussion ensured clarifying what is actually involved in terms of schooling to achieve certain careers. Adolescents' and tutors' perceptions of the experience were solicited by the researchers in an open circle discussion after the sessions. Their anecdotal reports indicated that they both enjoyed the experience and actively processed their thoughts about their own career interests and personality styles.

Programs also comprised interactive workshops. At the first workshop, a professional consultant with a PhD and professional counseling license explained to students his perceptions of what it takes "to make it in life," his own experiences on the road to success, the benefits of viewing the self positively, and the importance of staying in school. At the second workshop, a professional consultant with a PhD and MSW made a presentation on ways in which students can better prepare themselves for college. To help students understand the process of college admissions, the consultant handed out to all parents in attendance a complimentary copy of her book, *How to Get Admitted to College, Even If You Have Less Than Perfect High School Grades.* The third workshop provided the students with a special treat. Michael Curry, a starting forward for the Detroit Pistons of the National Basketball Association, described to students his personal strategies for success. Curry stressed the importance of education, arduous work, mental preparation, and especially the ability to persevere in the face of inevitable hardships. Finally, the last workshop of the year provided students with a guided tour of a local university. One component of this program was an analysis made by university counselors of the relationship between a student's total years of schooling, their projected lifetime earnings, and their standard of living for each level of educational attainment.

Results

Analysis of covariance (ANCOVA) was used to determine whether change in academic performance, as measured by GPA, occurred among either the control group or the experimental group, after the year of intervention. GPAs for both the experimental group and the control group did not significantly change between the eighth and ninth grade. Both remained within the C range. Next, a Multivariate Analysis of Covariance (MANCOVA) was used to detect changes in the five educational attitudes and behaviors subscales. There was no statistically significant difference between the two groups.

Despite the fact that the GPA of students in the experimental group did not improve, the program was successful in achieving its basic goal, "keeping kids in school." The actual retention rate was considerably better for the ninth graders who participated in the program than for the rest of the ninth graders in that school

and for the entire school district of ninth graders. Specifically, only 7.7% of those ninth grade students who completed the program dropped out at the tenth grade, whereas the dropout rate for that high school was 13% and for the entire school district was 15%. Since reducing the dropout rate is perhaps the most important single goal of both this program and educational efforts in general, reducing the dropout rate by roughly half is a very positive development.

Additional results from Pearson correlation analyses revealed significant correlations (for both the experimental and control group) between students GPAs and two of the five educational attitudes and behaviors subscales. Specifically, GPA was higher when Educational Intentions (to finish high school) and Identification of Personal Value of Education (feeling proud of myself) were greater. Intentions to finish high school were also strongly correlated with actual behaviors related to executing the intentions at both the beginning and end of ninth grade.

Researchers next examined adolescents' narrative responses to the questions for themes, which is a common practice in evaluating open-ended, narrative data. Several patterns emerged. The students who completed the survey at the beginning of ninth grade reported that the decision to stay in school was most influenced by the desire to gain knowledge, reach goals such as making money, and because of parental authority and family influence. Among all adolescents, very few students indicated that faith (interpreted by the researchers to mean faith in a higher power) would be a factor in success (endorsed by only two students in the tutoring group and one in the comparison group).

Discussion and Practical Implications

What lessons about dropout prevention can teachers, counselors, administrators, and parents glean from this program of academic tutoring and supplemental enrichment? The present study strengthens the idea that school transitions can be problematic. Competing lures (peers, dating, working, etc.) likely contributed to the lack of change in GPA over the ninth grade for the experimental group. Accordingly, there is further evidence that the public education system better anticipate such dynamics and implement more effective prevention efforts, especially before the transition to the ninth grade occurs. The ninth graders' intentions to stay in school were significantly correlated with behaviors that are linked to completing school (i.e., attendance, studying), yet their grades still did not improve over the ninth grade year. The transition to high school can be overwhelming for some adolescents, and is linked to decreased academic achievement. It is perhaps explained by such variables as teachers shifting their styles of instruction and evaluation to become more performance-oriented, and the increased emphasis on grades in high school (Steinberg, 2002). Other variables such as adolescents' own cognitive development may also be contributors to this apparent disconnect between intentions to stay in school and actual improvement in grades.

Perhaps the most important practical lesson of this program is that tutors, supplemented with professional consultants, may have a positive impact on the vital decision of students to remain in high school. Based upon extensive observations and discussions between students, tutors, and project directors, we believe there were many students who were not completely engaged in the tutoring process but continued to attend the sessions. These students seemed to regard the after-school program partly as a social activity, a refuge where they could be with friends, safe from the competing lure of street life or from having to take care of siblings. In short, even though some students may have attended the tutoring sessions more to be with friends than to learn, in the process, it seems fair to say that they developed a greater commitment to school, which they perceived as a stable, caring environment which gave them a sense of belonging.

A second lesson is that, based upon their responses in surveys, the students appeared to enjoy monthly workshops with professional consultants. Students reported in the pre- and postquestionnaires that they looked up to people whom they admired and from whom they received guidance. Similarly, students reported that they liked meeting African American role models who encouraged them to be hopeful about their own future and to be optimistic about life's possibilities.

The third lesson involves the exact kind of support that students receive in an intervention program. It is not enough simply to encourage students to study hard and to do well in classes, the reasons for which are often placed in somewhat abstract contexts. Egocentrism (i.e., personal fable—"it'll never happen to me") and identity exploration are strong at this time of adolescence (Steinberg, 2002), and they compound the challenge of convincing ninth graders that achievement has important ends. As others (e.g., Srebnik & Elias, 1993) have stated, adolescents may need more concrete connections to careers and to the reasons for hard work and preparation.

In encouraging students to remain in high school and to prepare themselves for college, we offered students specific tips including: read books, study with peers, seek a role model at school, home, or church to serve as a mentor, attend career day presentations, and practice taking standardized tests. This information often was very practical and concrete, with presenters showing students charts depicting various job descriptions paired with pay levels. Presenters pointed out the tangible differences between a student's projected lifetime earnings at various levels of education if they did not at least complete high school. Above all, the role models helped students to understand the specific steps, one at a time in a sequence, involved in reaching their goals.

The final lesson is that intervention programs must be designed to deal with adolescents who may be enduring developmental transitions in the face of other adversity. Specifically, the compound effects of low SES and racial isolation on the already difficult adolescent transitions of this group of minority youth are likely to weigh significantly on the pivotal decision of these youngsters.

Effective urban school dropout prevention programs should provide students with hope and optimism to counter the effects of generations of poverty and inadequate employment opportunities in inner-city America. The most salient result of this intervention program was

that the dropout rate in tenth grade was lower for the group who participated in the program, compared to both the entire ninth grade in their school and school district. It may be that the tutoring program helped students to be more committed to staying in school, as well as to take greater personal pride in themselves. Apparently, it is vital to appeal to students personal pride in their school work, to have students accept the importance of behaving in a committed way to school by working hard and regularly attending classes, and to make concrete connections for students between their school work and their life goals.

Limitations of this research must also be mentioned—the sample size was relatively small, and although piloted in advance, several measures were newly created for this research. The most notable design feature in need of improvement, however, is that the study was quasi-experimental and not truly randomized. Future research would benefit from evaluating this intervention approach through an experimental design in which students are randomly selected from the population and randomly assigned to the treatment or comparison groups. This would eliminate possibilities of sample biases. In the current sample, students volunteered to participate in the program, and thus it is possible that those who self-selected to participate in the program were among those struggling most with motivation for academics or were most in need of the extra one-on-one attention that comes with tutoring.

Despite these shortcomings, the present study contributes to the existing literature in several ways. After-school tutoring, combined with enrichment programs that furnish students with consistent interaction and a mentor-like relationship with a caring adult (i.e., a tutor), appeared to provide the adolescents with some key support needed to remain in school. This nurturing environment, supplemented with presenters who offered specific career information that helped students to believe in life's possibilities for themselves, may contribute to preventing school dropout among inner-city African American adolescents.

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DROPOUT-PREVENTION PROGRAMS Right Intent, Wrong Focus, and Some Suggestions on Where to Go From Here

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The factors that contribute to student dropouts have been the focus of extensive deliberation during the last decade. Despite expanded attention, the number of dropouts remains unacceptably high. Drawing on the authors' 17-year history of dropout research in Texas, Arizona, and across the country, this article describes the alarming dropout rates, especially among Hispanic students; assesses efforts that have been undertaken to address the dropout issue, including proven dropout prevention programs; and provides a new paradigm for preventing dropouts.

Keywords: *dropouts; dropout calculating; dropout prevention; school holding power*

BACKDROP: FROM DROPPING OUT TO HOLDING ON

News stories in the national media periodically chronicle heroic efforts to find and recover children who have somehow gotten lost in our nation's wilderness areas. These searches are often large-scale efforts involving extensive logistical coordination across state agencies and hundreds, and sometimes thousands, of individuals, and they periodically result in recoveries that are celebrated by participants and observers alike. These massive efforts to recover lost children are indeed impressive and should be applauded. Although we literally move mountains and overcome significant bureaucratic mazes to recover loved ones lost in the wilderness areas, local schools literally lose thousands of students every year, but tragically, few people seem to notice.

AUTHORS' NOTE: *Portions of the program descriptions contained here are adapted from* Dropping Out of Arizona's Schools: The Scope, the Costs, and Successful Strategies to Address the Crisis *by the Intercultural Development Research Association and commissioned by the Arizona Minority Education Policy Analysis Center.*

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The issue of schools losing students before they graduate from high school is not new. The problem is one that has been long unresolved or inadequately addressed in many communities over many decades. Because of reporting requirements in the federal No Child Left Behind (NCLB) Act, the issue is gaining increased attention. In prior generations, the existence of a pool of uneducated and of undereducated citizens was tolerated, even reinforced, by communities. Individuals with little or no formal schooling, mostly minority, poor, or immigrants, provided what was perceived as an essential unskilled labor pool for an industrially and agriculturally fueled economy. As workplace demands evolve, communities are increasingly concerned about an inadequately prepared workforce (National Alliance of Businesses, 2001). These concerns are, in turn, tied to the evolution of compulsory school attendance laws and practices, which first covered elementary-level schools but were eventually extended to cover older students enrolled in high schools. Compulsory attendance requirements led to systems that tracked student status as schools began to have to account for their charges. According to the Education Commission of the States (2000), all states now require compulsory school attendance until the age of 16.

As workforce needs and national expectations about school attendance and completion have changed, high school graduation has become the expected minimum level of schooling for all children. Given this, concerns about counting and about accounting for dropouts have emerged as important issues at both state and federal levels.

The focus, for researchers, educators, and policymakers, however, has generally been on fixing students and not on strengthening or on changing the school systems that are accountable and responsible for ensuring that children succeed throughout the educational system. The Intercultural Development Research Association (IDRA) has worked to change this focus from a deficit perspective to valuing all children. Starting with two pioneering studies (the first statewide study of the dropout rate in Texas and an early longitudinal comparative study of dropouts in a major metropolitan area), IDRA's work has promoted a paradigm shift from dropouts to school holding power with the idea that schools must hold on to students because of their value, their contributions, and their potential significance to their communities and to society as a whole (Cárdenas, Refugio Robledo, & Supik, 1986). This shift changes a school's culture from one that prevents or recovers dropouts and that finds students who are at risk to a school culture that seeks ways to educate all students and to develop a graduation plan for every individual child.

Throughout the country, and particularly in the major urbanized states, more and more attention is now focused on dropout rates. For example, the state of Texas, in its long-range plan, includes a major section focusing on dropouts and outlines both a goal and strategies for reducing the Texas dropout rate (Texas Education Agency, 2000). Lending urgency to many of these efforts is the growing national recognition that minority students are becoming an ever-increasing proportion of U.S. school enrollments and that the undereducation and the related dropout rates among minorities have historically been higher than among White, middle-class populations (Cárdenas, del Refugio Robledo, & Waggoner, 1988; Secada et al., 1998). Recent data compiled by the U.S. Census Bureau reveal that 43% of the Latino population did not earn a high school diploma, and of that number, 26% had dropped out before the ninth grade (U.S. Census Bureau, 2002). Since 1986, when IDRA conducted Texas's first comprehensive, statewide study of high school dropouts, Texas schools have lost nearly 2 million students, with an estimated net loss to the state of $488 billion. That is an average of 140,000 students lost every year, or 6 students every hour.

Over a 16-year period, inadequate school holding power has cost Texas citizens almost half a trillion dollars in foregone income, tax revenues, increased welfare, job training, unemployment, and criminal justice costs (IDRA, 2001), an institutional picture that has looked disturbingly similar over almost 2 decades.

COUNTING AND ACCOUNTABILITY: THE NEED FOR ACCURATE DROPOUT NUMBERS

The lack of accurate dropout numbers, of public will to face those numbers, and of effective school-system responses are reasons why our schools continue to lose students. For the Latino community, whose children drop out in numbers and at rates much higher than all other groups, the situation has reached a crisis level. As Latinos become a majority population in many states, failure to address the dropout/graduation issue will have disastrous implications. In a study projecting demographic trends, Steve Murdock of Texas A & M University notes that unless Texas addresses issues of undereducation, particularly among its growing Latino population, the average net income of Texas households will actually decline by more than $3,000 (Murdock, Nazrul, Michael, White, & Pecotte, 1997). Such a decline, in turn, spells disaster for the state revenue (tax) structure, its economic future, and its support-services systems.

Recent national attention has focused on Texas dropout counts. Instead of identifying, counting, and reporting students who fail to graduate as drop-

outs, the state of Texas has created more than 30 so-called leaver codes, which result in a gross undercounting and underreporting of students who have never received a high school diploma. They are counted as so-called leavers who intended to transfer or are in a GED program or are incarcerated, thus keeping the state dropout rate misleadingly low (Johnson, 2000; Supik & Johnson, 1999). Texas, unfortunately, is not unique in its inadequate dropout counting. Lack of valid, accurate, reliable dropout numbers plagues most state systems.

It is this persistent and too often universal denial of dropout realities that prevents a more comprehensive focus on dropout prevention and on graduation efforts. If there is no problem, there is no need for solutions. Following extensive public attention on the issue in prior decades, recent efforts have all too often focused on ways to define away dropouts rather than on actually keeping more students in school.

Recent national media attention on the perversity of the Texas dropout-counting process, though focusing on one single district, missed the truly crucial point: That local officials did not need to go to the extent that they did to hide their real dropout numbers. The Texas system for tracking student status in itself would have allowed them to legitimately use the state's leaver coding system to hide as many dropouts as were needed for schools to achieve the levels required to earn so-called exemplary or recognized school status. It is only when real dropout numbers are generated that states and the nation will recognize the urgency needed to generate real, credible dropout estimates. Once a sense of greater urgency is achieved, the need to identify and to replicate dropout-prevention and dropout-recovery efforts will expand and will yield greater numbers of effective programs than have been created to date.

TRACKING STUDENT STATUS

A first step in any dropout-prevention effort requires the determination of the enrollment status of students who are supposed to be attending school. With the emergence of low-cost technology to facilitate school data management, determining the enrollment status of students has become both cost effective and practical. As a result, more and more schools and states have developed capabilities to warehouse and to analyze significant amounts of student-based information. Data on student tracking systems suggest, however, that once a child leaves a school building or a school district, capacity to document (in a timely and an efficient way) students statuses declines rapidly, and responsibility for the child seems to discontinue. For children who permanently leave a school that they had been attending, efforts to confirm their enrollment status in another school are much more lax or are simply nonexistent. Many parents and community leaders may assume that there are systems in place to track and to facilitate the transfer of students from one school to another. Yet no such transfer systems are in place in Texas and, for that matter, in most states around the country. Some states may require receiving schools to confirm the new enrollment to a sending school within that state, but the extent of local compliance with such requirements appears to be highly variable. The lack of reliable and of consistent within-state student transfer or verification systems is compounded by the lack of across-state transfer notification processes. An absence of any federal requirement that schools communicate with one another about transfer students reinforces this lack of coordination.

Although in most schools educators simply lose track of students, there is a persistent tendency to presume to know where students have truly gone. State- and national-level accountability reports purport to summarize actual local, district, and state dropout rates (National Center for Education Statistics, 2002). A closer examination of these data indicates that these status checks are often student or school self reports with little or no secondary verification of the students' real statuses. In Texas, for example, schools can report a student as having transferred (or as having an intent to transfer) to another school district in the city, within the state, or to another state. That student is then considered a transfer, though no verification of subsequent enrollment actually has to take place (Texas Education Agency, 2003). Texas, unfortunately, is not unique; though a few states, including Arizona, do require some sort of verification, with absence of verification causing such students to be re-coded as *status unknown* (Arizona Department of Education, 2001); these are the exception rather than the rule.

Despite some movement to improve dropout counting and reporting, much improvement is still needed. Given that school completion or graduation rates (and the related dropout counts) are now incorporated into state accountability systems as a result of the NCLB Act, we can expect the debates about dropouts and about dropout counting and reporting to increase as local and state officials attempt to comply (Swanson, 2003). Emerging research is beginning to uncover the fact that variations in how dropouts are counted and reported in individual states can result in notable differences in resulting dropout rates used for accountability in NCLB provisions (Swanson & Duncan, 2003).

Lack of reliable and of accurate dropout data has contributed to minimizing the issue and in turn to discouraging any large-scale efforts to do anything about the problem. Understandably, when states report dropout numbers in the single digits, community leaders and policy makers do not think that there is a problem to be addressed. For this reason, the authors propose that lack of adequate dropout-counting and -reporting procedures may be the single most important factor in limiting the dropout-prevention efforts and the community responses that would catalyze and promote the persistence of these efforts.

TYING FUNDING TO SCHOOL ATTENDANCE AS DROPOUT PREVENTION

Advocates for improved educational outcomes for all students long ago assumed that if we simply improved our procedures for keeping track of students that we could improve school holding power. In fact, dating back to the 1950s, state school-funding policies were designed to encourage schools to recruit students and to sustain student enrollment. Early school finance systems incorporated the concept of paying local schools on the basis of the number of pupils enrolled. Although initially effective in supporting the recruitment of children into schools, early procedures allowed schools to report the count of students on a particular day of a limited number of designated reporting dates. Schools quickly learned to ensure that counts were high on specified reporting dates but were not similarly concerned if students did not show up for class on all the remaining school days when counts were not reported. Many states modified their funding formulas to approaches that relied on some variation of average daily attendance. The move to using average daily attendance was perhaps one of the early dropout-prevention procedures used to motivate schools to keep students attending school, though it was not necessarily perceived as a dropout-prevention strategy.

More focused dropout-prevention efforts did not originate until counts of students that remained in school until graduation became an important indicator of a school's effectiveness. In Texas, prior to 1987, local schools did not submit formal dropout counts to the state education agency (Cárdenas, Refugio Robledo, & Supik, 1986). Similarly, few states around the country compiled any reported school-dropout information. Dropouts and dropout prevention became important only when policy makers requested dropout counts. Dropout prevention became important only as policy makers became

aware of the significance of the dropout numbers and of and their implications for workforce development, revenue generation, and support services. With the increased levels of concern came an increase in the pressure for schools to reduce their dropout rates.

Did the increased availability of more accurate student dropout numbers contribute to reducing dropout rates? Research over many years has documented that simply having more data does not translate to decreasing dropout rates. Schools eventually adjust budgets created by diminishing student enrollments without expending efforts to recover those lost from the system. The numbers do provide some basis for action, however. Our experience in Texas suggests that increased public awareness of the extent of the dropout problem can contribute to pressure to address the issue. IDRA's long experience in school finance reform, in turn, indicates that persistent public pressure to address an issue can also lead to substantive changes in state policy (Cárdenas, 1997).

RESPONSES TO DROPOUT IDENTIFICATION: PREVENTION AND RECOVERY

THE NEED FOR EVIDENCE

A review of research on dropout prevention reveals that most efforts tend to focus on student characteristics and on concomitant attempts to fix the student. In the conventional research paradigm, researchers propose that, by focusing on student characteristics, schools and others can create responses that address those needs or issues identified. Review of the dropout research indicates that many programs tend to focus on such variables as family or financial issues, teen pregnancy, mobility, and similar areas where schools are neither a major contributor nor in which schools can exercise much control (Darling-Hammond, 1998).

As could be expected, research and programs that focused on fixing the student have failed them miserably. What has worked are dropout-prevention efforts that focus on the inherent value of the students and of their families. But it is critically important to recognize that, even with an expanding focus on what needs to be valued and reinforced, what currently exists is not enough. Part of this emerging insight is that what is not needed is simply new or better or even more programs; what is needed are effective, systemic reforms that will improve a school's holding power.

Research conducted by IDRA suggests that the greatest cause of student dropout may be the schools' inability to effectively assist certain groups of students to learn (Robledo Montecel, 1989). Unfortunately, little research has focused on school factors that may be the root causes for why so many students leave school prior to graduating. As a result, the programmatic responses are based on "fixing" the student rather than on identifying what school characteristics contribute to a student leaving school, characteristics such as lack of quality teaching, low expectations for certain students, lack of professional development, lack of resources, noncredentialed teachers, or lack of leadership.

Even if all schools were to become instantly motivated to graduate all of their students, a limited number of proven programs, and minimal interstate and intrastate dropout-program communication and coordination, hampers effective program identification and replication. At the national level, there is currently no effort in place that comprehensively identifies research-based and effective dropout-prevention and dropout-recovery programs.

In 2002, the U.S. General Accounting Office (GAO) concluded that what works in dropout prevention is unknown. Although there may have been some exemplary or model programs across the country, there was little information that would substantiate program replication. Sixteen years later, the GAO reports that a variety of state, local, and private dropout-prevention programs exist, but in many cases, their effectiveness is unknown because they still have not been rigorously evaluated.

At the national level, the Dropout Prevention Demonstration Program specifically targets dropouts but does not currently have any evaluation data because the program is relatively new. Astoundingly, the GAO (2002) report notes the following:

> The federal government does not track the amount of federal funding used for dropout prevention services or require that evaluations of programs include assessments of their effect on dropout rates, even for programs for which dropout prevention is an objective. (pp. 4)

The 2002 GAO report recommends that the U.S. Department of Education evaluate the quality of existing research, encourage the rigorous evaluation of dropout-prevention programs, and identify effective means for disseminating information on programs deemed effective. This lack of rigorous evaluation, identification, and dissemination of information on effective dropout-prevention programs and on dropout-prevention practices leaves schools without the guidance and the critical data needed to make informed choices for their students.

There are close to 4,000 listings on the Internet for dropout-prevention and dropout-recovery programs. Despite this impressive number, it is difficult to find rigorous evaluations or research on the program models. The privately funded National Dropout Prevention Center (NDPC), housed at Clemson University in South Carolina, provides a database of dropout-prevention model profiles. What is missing from many profiles, however, is any evaluative information.

In 1997, Fashola and Slavin reviewed dropout-prevention programs throughout the country and determined that only two, IDRA's Coca-Cola Valued Youth Program and Achievement for Latinos through Academic Success (ALAS), had rigorous evaluations that provided evidence of effectiveness (Fashola & Slavin, 1997). Several other programs also have some evidence of their effectiveness (as described by the National Dropout Prevention Center and in Williams, 1999), and they are further described below. Before reviewing the inventory of programs provided, the authors caution that it is important to remember that programmatic responses are only part of the dropout solution. Schools must engage in good educational practices for all of their students as part of their regular schooling and teaching/learning practices.

WHAT WORKS

Key program characteristics. IDRA's research on strategies for reducing the dropout rate, based on a review of the research of effective dropout-prevention strategies and experience over the last 3 decades, shows that the following components are vital to successful dropout prevention:

- All students must be valued: In his comprehensive study of Hispanic dropout-related issues, Secada et al. (1998) propose that "Latino pupils need to be coached, not rescued . . . [given] opportunities to take responsibility for their learning and later lives." Analysis of dropout-prevention programs suggests that the most successful programs provide opportunities for students to be recognized and acknowledged as valuable and as contributors to a greater good.
- There must be at least one educator in a student's life who is totally committed to the success of that student: In a comprehensive study that tracked the school experiences of cohorts who enrolled in the Dallas Independent School District, IDRA found that the single most important variable predictive of student persistence to high school graduation was the presence of an adult who supported the student and his or her quest to earn a high school diploma (Robledo Montecel, 1989).

- Families must be valued as partners with the school, all committed to ensuring that equity and that excellence are present in a student's life: In its work with hundreds of schools across the country, IDRA has noted that the most successful campuses are those that find ways to engage parents and community members in all phases of school operations. In these schools, parents are more than PTA members and volunteers but are engaged as decision makers and as advocates for improved opportunities for all children enrolled on these campuses (Robledo Montecel et al., 1993).
- Schools must change and innovate to match the characteristics of their students, and school must embrace the strengths and the contributions of students and of their families: Research on effective schools indicates that the schools with the greatest holding power are those that are responsive to the needs and the characteristics of their students, those not hesitant to try new ideas, and those willing to engage students and the community in innovative ways. In an analysis of successful Texas schools, researchers noted that those schools most willing to embrace reforms experienced the greatest improvements in student outcomes (Charles A. Dana Center, 1998).
- School staff, especially teachers, must be equipped with tools to ensure their students' success, including the use of technology, ways to respond to different learning styles, and mentoring programs: Effective professional development and access to alternative strategies responsive to students' differing ways of learning, including variations in receptivity to visual or to auditory stimulus, enable teachers to more effectively reach student learners. Effective integration of technology can expand access to information and can support connections with a vast array of external learning opportunities. Mentoring strategies can connect pupils with peers and with adults who can provide invaluable support and direction that may not be readily available to some students.

EXAMPLES OF PROGRAMS

Examples of some programs that incorporate one or combinations of these qualities and that also have evidence that they work to keep students in school.

> Interventions must be intensive, comprehensive, coordinated and sustained. Anything less is naive and will show only marginal results. There is no "cure all" or "fix the kid" phenomenon. . . . When special intervention is stopped before high school graduation, one can expect high-risk youth who have become successful to once again be at risk for school failure and drop out. (Williams, 1999)

ACHIEVING A COLLEGE EDUCATION

Achieving a College Education (ACE) is a nationally recognized program targeting students who traditionally would not consider going to college. The ACE program began at South Mountain Community College (SMCC) in 1987. Since then, 250 high school students have participated in the program's summer institute each year. The program provides an opportunity for high school juniors and seniors from Phoenix Union High School District and from Tempe Union High School District to take college courses while attending high school. During these 2 years, students attend SMCC during the regular summer sessions and every Saturday during the fall and the spring semesters. Program eligibility requires that students be the first in their family to attend college, have evidence of economic hardship, are a member of an underrepresented group, and have environmental challenges (personal, single parent, etc.). Preliminary evaluation information is promising. SMCC provides the funding for the program's cost, which averages about $1,250 per participant.

ADVANCEMENT VIA INDIVIDUAL DETERMINATION

Advancement Via Individual Determination (AVID) is a comprehensive middle school through high school reform program designed to prepare educationally disadvantaged, underachieving students who have demonstrated potential for success in a rigorous secondary-school curriculum for 4-year college eligibility. The program also restructures the teaching methodology of an entire school to make the college preparatory curricula accessible to almost all students. AVID has developed a comprehensive professional-development program. As of 1998, AVID has been implemented at 750 middle schools and high schools in 13 states, including California, Colorado, Georgia, Illinois, Kentucky, Maryland, Nevada, New Jersey, North Carolina, South Carolina, Tennessee, Texas, and Virginia. AVID also serves the U.S. Department of Defense Dependents Schools, with 55 sites in Europe and in the Pacific.

Costs of the AVID program vary from state to state. In California, AVID is a state-funded program with resources provided for 11 regional centers. The initial cost of the program is under $2 per student per day in Year 1, declining

to under $1 per student in Year 3. Outside California, initial costs per student are typically under $3 per day, with Year-3 costs declining to under $1 per day.

AVID has been thoroughly studied through independent research. A well-developed AVID program improves school-wide standardized test scores, advanced-level course enrollments, and the number of students attending college. In *Constructing School Success*, Mehan (1997) and colleagues studied eight AVID high schools and found that AVID graduates outperformed their comparison groups in college enrollment. This research team from the University of California, San Diego, also discovered that 89% of the AVID graduates were still in college after 3 years. They also discovered that 92% of all AVID graduates enrolled in college, a rate 75% higher than the overall student population. The AVID national office—the AVID Center—has collected data indicating that 85% of AVID's graduates complete 4-year college requirements and that more than 60% of AVID graduates enroll in college.

ACHIEVEMENT FOR LATINOS THROUGH ACADEMIC SUCCESS (ALAS)

Achievement for Latinos through Academic Success (ALAS) is a dropout-prevention program for middle school or junior high, Latino students who are most at risk of dropping out of school before graduating. ALAS focuses on youth with learning, emotional, and behavioral disabilities using a multifaceted approach of home, school, and community. The program is primarily implemented in California schools with high-poverty neighborhoods. Students are provided with social problem-solving training, counseling, and recognition for academic excellence. School strategies include improving social and task-related problem-solving skills, intensive attendance monitoring, providing recognition and bonding activities, and providing frequent teacher feedback to parents and to students. The program also focuses on integrating school and home needs with community services and with advocating for the student and the parent when necessary. Community strategies include promoting collaboration among community agencies for youth and family services.

A rigorous evaluation showed a lower dropout rate for ALAS students (2.2%) when compared with a control group (16.7%). The ALAS program worked especially well for students in special-education and in high-risk groups.

COCA-COLA VALUED YOUTH PROGRAM

The Coca-Cola Valued Youth Program was first developed by IDRA in 1984. Since then, the Coca-Cola Valued Youth Program has kept in school more than 11,500 middle and high school previously thought to be at risk of dropping out of school students, including students in Tempe, Arizona schools. The valued youth philosophy—that all students are valuable and that not one is expendable—helps more than 250 schools in 25 cities keep 98% of valued youth in school. The program works by placing junior high school students in positions of academic responsibility as tutors of elementary school students. Tutors are paid a minimum wage stipend for their work, reinforcing the worth of the students' time and efforts. Rigorous Coca-Cola Valued Youth Program evaluations show students consistently feel better about themselves and about their schools and that students improve their grades, attendance, and discipline. The program also improves communication between schools and families, lessens financial burdens, and renews family pride. Coca-Cola Valued Youth are an inspiration to the children they tutor, positive leaders among their peers, motivated learners to their teachers, a source of pride to their parents, and contributors to their communities. The Coca-Cola Valued Youth Program is a U.S. Department of Education exemplary program, validated for its effectiveness by the Program Effectiveness Panel.

One Valued Youth tutor reported that he is saving his wages from the program to purchase a headstone for his mother. She had died recently, and there is no other way his family would be able to afford a headstone.

One tutor recently testified before a congressional committee that, after being a Coca-Cola Valued Youth tutor, he cares about school and respects his teachers. He also told of seeing one of his first-grade tutors on the playground by himself one night and taking him to eat and then taking him home. He said, "I was worried that he was out there by himself and thought it was my responsibility to help him."

HISPANIC MOTHER-DAUGHTER PROGRAM

The Hispanic Mother-Daughter Program was first launched in 1984 at Arizona State University. The program begins working with girls in the eighth grade to help them stay in school and complete a 4-year college

degree. In the 2000 through 2001 school year, 750 participants from 41 schools in the East Valley and Phoenix Union School District were enrolled.

The program involves mothers directly in their daughters' educational process through a support network of school counselors, community leaders, and professional role models. The students' academic and personal progress is monitored from eighth grade through the completion of their bachelor's degree. Tutoring is also provided in the math and in the science program at Arizona State University and at Phoenix Union School District high schools. Eligibility criteria include that the students attend one of the targeted schools in the Phoenix or the East Valley districts, be a potential first-generation college-bound student, be presently enrolled in the seventh grade, be at the seventh-grade level in reading and in mathematics, have at least a 2.75 GPA, be proficient in the English language (daughter only), and make a firm commitment to attend all of the required workshops.

Evaluations show that 85% to 95% of the girls who remain in the program graduate from high school. The number of Hispanic women enrolled at Arizona State University has doubled over the past decade, and the number of first-time Hispanic women who graduate within 6 years has also increased from 37.4%, in 1987, to 47.2%, in 1991 (http://www.asu.edu/studentlife/msc/hmdp.html).

JOBS FOR AMERICA'S GRADUATES

Jobs for America's Graduates (JAG) first began in 1979 in Delaware with federal, state, and private-sector support. Over time, it developed as the nation's largest school-to-work transition model for at-risk students. JAG works with states to develop statewide employment for students and to reduce the dropout rate. In 2000 and 2001, JAG served 70,000 in- and out-of-school youth in 1,000 high schools and vocational centers in 27 states. The JAG (1998) model comprises 4 distinct applications that share these key elements:

1. A specialist who is held strictly accountable for 35 to 45 young people who were selected by a school advisory committee;
2. Reduction of barriers that would keep a JAG participant from receiving a high school diploma, securing employment, or pursuing a postsecondary education and/or training that leads to a career;
3. Involvement in a highly motivational student organization—the JAG Career Association;

4. Classroom instruction in 37 employment competencies identified by the business community;
5. Involvement of the business community in various facets of the program, including work-based learning experiences leading to mastery certification;
6. Intensive, one-on-one employer marketing and job development by specialists for employment leading to a career;
7. No less than 12 months of follow-up and support on the job after leaving school; and
8. Computerized tracking of young people served, services delivered, and performance results (graduation rate, positive outcome rates, aggregate employment rate, full-time jobs rate, full-time placement rate, further education rate, wages, and return-to-school rate).

Evaluations show that JAG students have a 90% overall graduation or GED rate (within 12 months of the normal school-leaving time); an overall 80% success rate as defined as participants on the job, in the military, or enrolled in postsecondary education or training; and a 30% improvement in employment. JAG costs approximately $1,200 per participant.

MATHEMATICS, ENGINEERING, SCIENCE ACHIEVEMENT

Mathematics, Engineering, Science Achievement (MESA) is one of the country's oldest and best known programs. It produces highly trained technological professionals to enter the workforce and to assume leading positions in industry. MESA has been profiled in *Science* magazine as one of the top programs in the nation that is successfully producing minority science professionals. The program, established in 1970, serves at-risk students and to the extent possible by law emphasizes participation by students from groups with low eligibility rates for 4-year colleges. MESA works with more than 21,000 students throughout California from elementary school through university levels. MESA is funded by the state legislature, corporate contributions, and various grants. It is a rigorous enrichment environment that includes MESA classes, academic advising, peer group learning, career exploration, parent involvement, and other services for students from elementary school through the college level.

The MESA Schools Program oversees 19 centers that serve close to 400 elementary, junior high, and high schools. The MESA Success Through Collaboration Program operates at 12 sites. MESA California Community Col-

lege Program is located on 11 campuses, geared to increase the number of math, engineering, and computer science students in 23 California colleges and universities.

More than 90% of MESA high school graduates in 1996 and 1997 went on to a college or university; in the same year, students made up 90% of California's underrepresented students who attained bachelor's degrees in engineering. And over a 5-year period, MESA's Community College Program has produced nearly 90% of the underrepresented students who successfully transferred from 11 community colleges to 4-year institutions and majored in science, engineering, or math.

UPWARD BOUND

Upward Bound is the oldest and the largest of the TRIO programs, which are administered by the U.S. Department of Education. Upward Bound targets 13- to 19-year-old students whose family income is under 150% of the poverty level or students who are potential first-generation college students. Program eligibility includes completion of the eighth grade, meeting the socioeconomic criteria, and a desire or a plan to attend college. Recommendations to the program are usually provided by the school's guidance counselors.

The program provides extra instruction after school and on weekends with an emphasis in mathematics, science, foreign languages, English, and composition. Students are also provided instruction in study skills, academic or personal counseling, tutorial services, information on financial assistance, and career planning. Students also participate in an intensive 6-week academic program at a college campus.

Evaluations of the program show positive results with Upward Bound students staying in school at a higher rate than their comparison group. Upward Bound students were also more likely to attend college, especially if they participated in the program for more than 1 year.

THE NEED TO REFOCUS EFFORTS

There is no single all-inclusive program for addressing the dropout issue. Approaches must be varied to address school, student, and family needs, and all programs should value the student, the family, and the community.

Schools must move from an emphasis on layering more effective add-on programs onto ineffective systemic efforts to larger scale systemic reforms that are designed to ensure that all students are successful all the way to and through high school graduation (Thompson & Cunningham, 2000).

In conjunction with a reorientation from programming to systems change, it is critical that research take up the question of the role and the influence of school organizational structure on holding power. In this regard, research by Lee and Burkam (2003) is at the forefront; however, much more work in this area is needed.

All dropout-prevention and dropout-recovery programs should be informed by strong evaluation plans that identify what aspects of school dropout-prevention or dropout-recovery programs work, for which students, and under which circumstances, including what may need to be modified or eliminated to make them more effective. Continuing to invest money in efforts without monitoring the real impact on school holding power is at best misguided.

Local efforts to improve school holding power should be provided the resources needed to achieve that goal. Review of state dropout-related policies reveals that most states currently do not provide targeted funding to help local schools directly address their local dropout problems. Ironically, dropout-prevention costs can be minimal when compared to the long-term costs associated with lack of a high school education. Estimated cost to the state for implementing one proven dropout-prevention program is approximately $1200 per tutor; including 75 elementary at-risk pupils that are also impacted by the program, reduces the per pupil costs to approximately $300 per student.

Any short-term costs invested for dropout prevention will far outweigh the costs involved if that same student drops out of school. Often absent in the discussion of the issue is the observation that though dropouts may be lost from school rolls, they do not similarly disappear in the larger society. Dropouts resurface in a variety of areas, ranging from job-training efforts to social-service client caseloads. Comparing the cost benefits, for every $1 invested in keeping students in school until high school graduation, the states save $10 in costs that would have gone to lost revenues, social support services, and judicial and incarceration costs that are estimated to result from dropping out (IDRA, 2001).

Perhaps most importantly, researchers and practitioners alike must refocus their efforts toward the development of a graduation plan for every student. By doing so, the assets of their students, rather than any perceived deficits, become the focus. Within that paradigm, students are no longer seen as potential risks but as high school graduates, ready to contribute at the highest levels possible.

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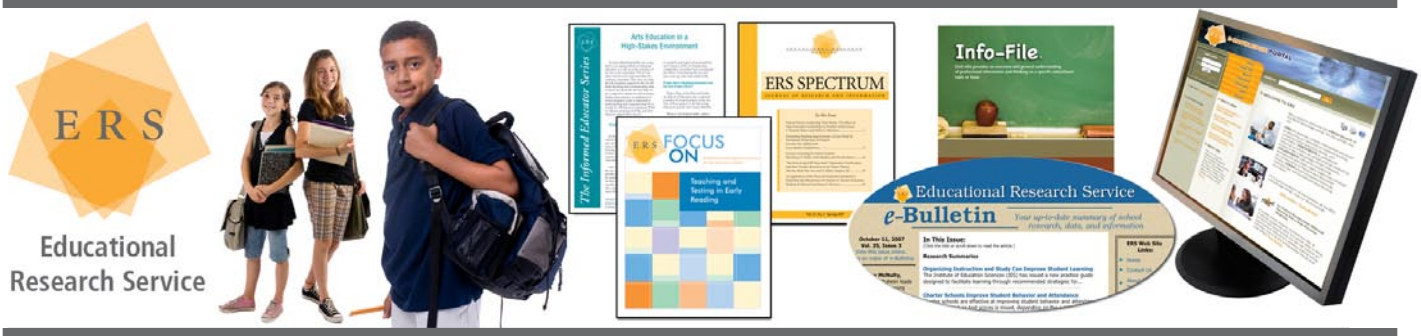

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